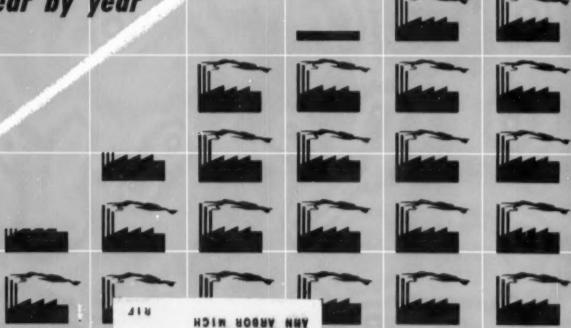
# Commercial Refrigeration & Air Conditioning

SEPTEMBER 1956



## INDUSTRIAL COOLING...

... more profit opportunities year by year



MERCHANDISING, SELLING, INSTALLATION AND MAINTENANCE OF AIR CONDITIONING AND COMMERCIAL REFRIGERATION EQUIPMENT

## REFRIGERATION DEALERS ARE GROWING WITH Expeland



Fourth in a series showing how everyone benefits through Copeland's aggressive distribution policy.

## lower inventory investment permits better, faster service

25,000 refrigeration dealers from coast to coast work handin-hand with 128 Copeland wholesalers and over 500 manufacturers of Copeland-powered equipment . . , forming a potent team whose share of the big refrigeration and air conditioning market is growing constantly.

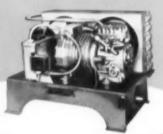
Their business is expanding for two reasons:

(1) They handle the best refrigeration and air conditioning equipment made; (2) they are backed by an alert, aggressive wholesaler-manufacturer network equipped to offer rapid and complete parts and replacement service and a wealth of valuable technical advice gained from years of experience with Copeland.

With a lower inventory investment and a cooperative sales and service team behind him, dealer can concentrate on increasing sales, confident his customers will get continuing satisfaction with Copeland Compressors and Copelandpowered refrigeration equipment.

#### COPELAMETIC

The industry leader for rugged dependability. Models for every application, Freen-12 in 1/4 to 71/2 H.P.; Freen-22 in 2 to 10 H.P. (High Temperature Only.)



The industry's newest

#### COPELAWELD

provides heavy duty performance at low current consumption. Froon-12, ½, ¾ and 1 H. P. Freon-22 models ½ through 1¾ H. P.





## and truck COMPRESSORS

High-speed belt-driven compressors designed specifically for the critical needs of truck and evto air conditioning and refrigeration.



#### Condensing units

Superior-engineered units for every refrigeration need, Remote and self-contained, water and air-cooled models available.

WRITE FOR SPECIFICATION AND PERFORMANCE DATA

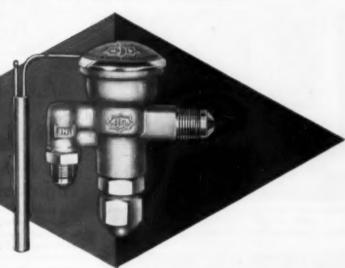
SINCE 1918

**Copeland**REFRIGERATION

CORPORATION, Sidney, Ohio

## for squeezing into tight spots

ALCO 402
EASIER-TO-INSTALL BODY
FOR SMALL FIXTURES



Compact—easy to handle! You can install it in any position—even upside down—in or out of the refrigerated area.

It's liquid charged! Pressure limiting—prevents motor overload.

#### CHOOSE FROM THESE CONVENIENT SIZES:

Freon-12 — ¼, ½ and 1 ton Freon-22 — .4, .8 and 1.6 tons Methyl-Chloride — ½, 1 and 2 tons

ALCO 402

ENGINEERED FOR SERVICE ENGINEERS

Designers and Manufacturers of Thermastatic Expansion Valves; Evaporator Pressure Regulators; Solenoid Valves; Float Valves; Float Switches,

SEE YOUR ALCO WHOLESALER

ALCO VALVE CO.

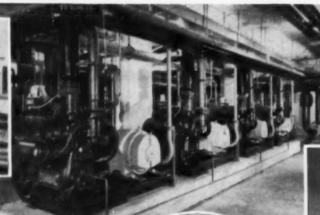
843 KINGSLAND AVE. . ST. LOUIS S. MO.

7046

Circle No. 3 on Reader Service Card



Frick unit air conditioners are built in 3, 5 and 7½ horsepower sizes.



Eight Frick "ECLIPSE" compressors, each with nine cylinders, air condition both the 11-story buildings of the American National Insurance Co. in Galveston, Texas.





Fragmented Shell-Ice is produced automatically: plants making block ice available in any size.

Below: Ammonia booster systems save power on quick-freezing work.



FRICK

# Air Conditioning and Refrigeration

#### The Industry's Most Complete Engineering Service

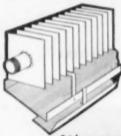
Including surveys, sales-engineering, design, manufacture, shipment, installation, and maintenance.

Built into Frick equipment are 50 years' experience in air conditioning, 74 in refrigeration, and 103 in engineering. Nowhere else can you get this combination of unique engineering experience, complete systems and complete service—on any commercial or industrial cooling load, with any refrigerant, at any temperature!

Branches and distributors the world over: write for literature and estimates today.



Synthetic-rubber reactors handle batches over twice as fast when cooled with patented Frick coils.



Frick square and spiral finned pipes save valuable space.



Circle No. 4 on Reader Service Card



In writing for literature, please describe the cooling work you wish to do.



Mr. Serviceman:

DOES YOUR PRESENT CAULKING COMPOUND GIVE YOU ALL THREE?

1. LOWER PRICE

2. EASIER APPLICATION

3. TOP PRODUCT QUALITY

If Not...You Owe It To Yourself To Start Using

Mortuto

CAULKING CORD or CAULKING GUM NOW!



Mortite Caulking Cord or Mortite Caulking Gum will perform your many caulking and sealing jobs faster, better than any other compound—and at much lower cost! Made specifically for and designed by refrigeration servicemen, these two MORTELL products come packaged in handy cylindrical containers to fit any tool box. Compact size eliminates waste.

#### These Facts Tell the Difference!

MORTITE CAULKING CORD—¾6" rope-like strands stay permanently soft. Non-staining, Mortite White in color, ready for immediate painting. Three compact, 8-strand 16-ft. rolls unwind one or more strands at a time without unwinding entire roll.

**MORTITE CAULKING GUM**—Easily hand-moulded into beads, wads, gaskets or any desired shape. One pound slug  $(2\frac{1}{2}" \times 6")$  never hardens or cracks—adheres to any clean, dry surface through normal temperature ranges.



Martite Caulking Cord or Martite Caulking Gum will do the job better than your present caulking compound at a fraction of your present cost. Write today for complete information about these two products and the complete line of Martell refrigeration products.

MAIL COUPON FOR FULL INFORMATION

ortell

Makers of Famous NoOrio Tage and Mortita

J. W. MORTELL CO.

553 Burch St., Kankeline, III. Pape. 7 O.KI Sand no full information about the compiline of Mortell refrigeration products.

Pm o \_\_\_\_\_\_Debor \_\_\_\_\_\_Dealer

Mana

Circle No. 5 on Reader Service Card

1906



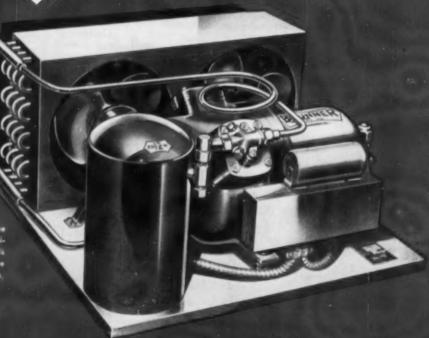
# TODAY

Look to Brunner for Refrigeration Condensing Units... engineered to give years of dependable service

THE BRUNNIE COMPANY, DAINESVILLE, OA



Choose the unit best suited for the job . . . from the Brunner-Metic semihermetic line. Sizes range from ta H.P. through 3 H.P. Also a complete line of Open-Type Condensing Units from & H.P. through 100 H.P.



# COMMERCIAL REFRIGERATION & Air Conditioning

SEPTEMBER 1956 . VOLUME 13 . No. 9

#### FEATURE ARTICLES

- 46 BLAST COOLING AIDS PRODUCTION FLOW . . . in this Denver candy plant by chilling chocolates so that they can be sorted and packaged before storage.
- 50 YOU GROW AS YOUR CUSTOMERS GROW . . . This Chicago cooling contractor has found that if you do a good job for your industrial customers you often will find yourself riding the rising curve of their expanding business.
- 51 DOOR-IN-A-DOOR . . . That's the best way to describe this ingenious method one dealer has developed for providing easy access between showroom and shop.
- 52 SELL THE SAVINGS STORY... in merchandising cooling towers to industrial users, and you'll find your own profits rising. Here are some case histories.
- 55 COOLING THROUGH PERFORATED PIPES . . . preserves fresh-caught aysters until they can be shucked and processed for market.

#### Air Conditioning Section

- 75 ALMOST FOR FREE . . . is the year-round air conditioning provided in this plant by a system that was carefully engineered to utilize process water for both heating and cooling.
- 76 WHAT'S YOUR AIR CONDITIONING I.Q.? . . . How would you solve these seven industrial cooling problems? See if you agree with the author.
- 80 USE WASTE STEAM FOR COOLING . . . Steam-jet coolers can effect substantial savings in air conditioning costs, wherever they can be used. Here's how they work and what they can do.
- 82 FACTORY COOLING NEW "INDUSTRIAL REVOLUTION" . . . In this survey, leading architects and consulting engineers offer their predictions on the growth of industrial air conditioning by 1960, 1970, and 1980.
- 84 JUST HOW BIG IS A "PACKAGE" INSTALLATION? . . . This one happens to total 640 tons of cooling, but no single unit is larger than 50 tons in capacity.
- 88 JUST SCRATCHING THE SURFACE . . . of its potential is the heat pump. This installation in an Alabama chick hatchery is typical of the new applications which are being developed every day for this type of equipment.

Copyright 1956 by The Industrial Publishing Group, a Division of Telenews Productions, Inc., Cleveland, Ohio.

Accepted as Controlled Circulation Publication at St. Jeseph, Michigan. Please return 3579 forms to 800 Caxton Bldg., 812 Huron Road. Cleveland 15, Ohia.

	DEPA	RTMENTS	
Letters	15	Useful Literature	58, 90
It's the Law!	24	New Products	60, 9
About People	32	Applications Manual	10
BTU's	45	Here's How	11
Commercial Sales News	56	Opportunities	12



### TRUCO Drills 2½" Holes in 90 Seconds on 8,400 Outlet Electrical Project

JOB: Penetrate  $3\frac{1}{2}$ " concrete cap over cellular steel flooring for  $2\frac{1}{2}$ " dia. electrical outlets at Ford Motor Company's new Administration Building. 8,400 holes required to bring in electrical, telephone and inter-com wiring for offices.

#### CONTRACTOR: Harlan Electric Company, Detroit

**TOOLS:** Truco Diamond Drilling Machine equipped with 750 RPM Motor and 2½" O. D. Truco Diamond Drill Bits. (Machine was also used for horizontal drilling.)

**DESCRIPTION:** Spotting crews located outlets and cut the rubber floor tile with a circular saw. Portable rubber-tired Truco Diamond Drilling Machine then drilled through concrete in 90 seconds per hole. Complete cores were lifted out leaving smooth, perfect holes, requiring no patching or finishing. Finished floor undamaged by drilling operation.

Picture shows Truco vacuum water pick-up removing cuttings and coolant water as Truco unit is drilling. Because Truco is dust-free and relatively quiet, drilling was done in occupied sections of the building without disturbing tenants.

Job superintendent reports, "No other equipment could do the job the diamond drill performed on this project. It shaved weeks off our schedule and reduced our drilling costs materially."

WRITE FOR NAME OF NEAREST DISTRIBUTOR

#### WHEEL TRUEING TOOL CO.

97-3200 W. Davison Ave. • Detroit 38, Michigan

Circle No. 7 on Reader Service Card

COMMERCIAL REFRIGERATION & AIR CONDITIONING was established in 1944 as The Refrigeration Industry. An independent publication, this magazine has no official affiliation with any industry society or association. It is published monthly by:

#### INDUSTRIAL PUBLISHING GROUP

(A Division of Telenews Productions, Inc.) 800 Caxton Bldg., 812 Huron Road Cleveland 15. Ohio

IRVING B. HEXTER ...... President
LESTER P. AURBACH ... Exec. Vice President
EDWIN M. JOSEPH ...... Vice President

#### STAFF

#### SALES OFFICES

GLEVELAND 13 SUperior 1-9622 ROBERT G. JOSEPH, Representative

CHICAGO 11 ... WHitehall 3-1655 CHARLES F. GEYER, Manager EDGAR D. CRILLY, Representative 520 N. Michigan Ave.—Room 1613

LOS ANGELES S ...... DUnkirk 9-9364

ALAN T. CAZIER, Manager
3440 Wilshire Bivd.—Room 1003

LONDON, S.W. 1, ENGLAND Victoria 2608 JOHN A. LANKESTER, Manager 31 Palace St., Westminster

EUROPEAN REPRESENTATIVE ERICH BOPP 22b Ingelheim (Rhein) Western Germany

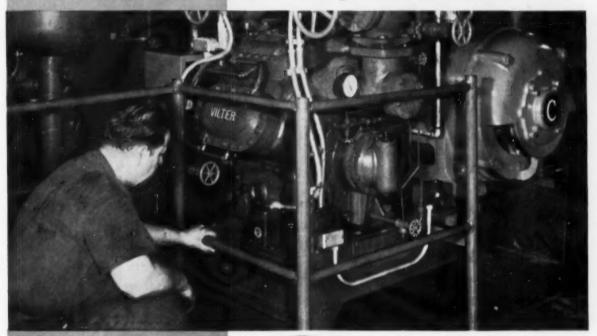
#### BPA

Subscription rates: United States and possessions—\$5.00 per year, \$8.00 for 2 years: Canada—\$5.00 per year: Foreign—\$7.00 per year, except the United Kingdom. United Kingdom subscriptions £ 2.5 per year, payable in Sterling to our London Office. Single copy price, 50 cents. All subscriptions subject to individual acceptance by the publisher.

INDUSTRIAL PUBLISHING GROUP also publishes Applied Hydraulics, Flow, Industry & Welding, Material Handling Illustrated, Modern Office Procedures, Occupational Hozards, Precision Metal Molding, and Welding Illustrated.

SEPTEMBER, 1956 . COMMERCIAL REFRIGERATION

# Here's the high starting torque you need for hard-to-start compressor loads



100 H.P. Century Performance-Rated type SCH Motor drives 4-stage compressor in air conditioning installation at large hotel.



Smoothly, easily, Century Performance-Rated Motors deliver the high starting torque necessary for stiff, hard-to-start loads. Swiftly, they accelerate the load from rest to full speed. They have quiet starting and running characteristics. Where starting current must be limited, they are connectible for part winding starting. Available up to 400 H.P.

You can get Century Performance-Rated Motors to fit the precise requirements of your installations: for compressors, circulating pumps, cooling towers, fans, blowers, stokers, etc. Sleeve or ball bearing; wide range of torque, speed, mountings, frames. Call or write your nearby Century District Sales Office or Authorized Distributor.

Performance Rated © MOTORS
1/20 to 400 H.P.



#### CENTURY ELECTRIC COMPANY

1806 Pine Street . St. Louis 3, Missouri . Offices and Stock Points in Principal Cities



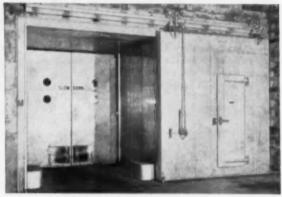
No wasted platform space

# Jamison Horizontal Sliding Cold Storage Doors Conserve

- conserve floor space
   give tight seal
  - permit power operation



Doors for large openings easily supported



Wicket door for personnel passage

Equipped for power operation with remote control



For help on any cold storage door problem, consult your architect or write to Jamson Cold Storage Door Co., Hagerstown, Md., U.S.A.



More JAMISON Doors are used by more people than any other Cold Storage Door in the world.



TRONA\* SALUTES DU PONT'S

25th "FREON" ANNIVERSARY

... contributing to "FREON" leadership with national distribution in dependable and economical

### Charg-A-Ca PACKAGED REFRIGERANTS

This year Du Pont celebrates its first quarter-century of producing "Freon" for the refrigeration and air conditioning industry. Since January 13, 1931, the ever-widening acceptance of "Freon" has been a tribute to the pioneering research and product development that has made this safe, non-toxic and non-flammable refrigerant the leader in its field. Today, the Refrigeration Department of American Potash & Chemical Corporation is proud of its teamwork with Du Pont as a leading national distributor of "Freon" products -teamwork that combines trade-knowledge, technical service, better packaging and wider distribution so necessary in a dependable source of supply.



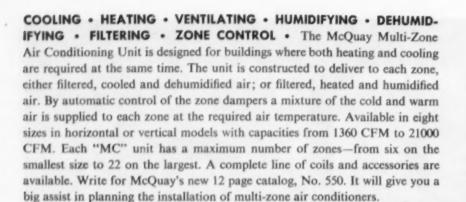
DEPARTMENT

American Potash & Chemical Corporation

TOO EAST ZETH TITREET + LOS ANGLLES ED. CALIFORNIA ... JO BARK AVENUE + NEW YORK EG, NEW YORK

Circle No. 10 on Reader Service Card

WHOLESALERS IN ALL PRINCIPAL CITIES.



Mc QUAY "MC"

HEATS COOLS

> SIMULTANEOUSLY up to 22 zones from one Multi-Zone Unit

#### Mc QUAY "AC" UNITS

Popular McQuay "AC" units, companions to the "MC" Units, provide heating, or cooling to commercial buildings where only one zone is required. Fourteen models for horizontal or vertical installation offer capacities ranging from 640 CFM to 21000 CFM. Write today for McQuay Catalog No. 505 to help you meet specifications for central air conditioner installations.



Horizontal "AC" Unit

McQuay representatives located in all principal cities.



Juay Inc. 1600 Broadway N. E., Minneapelis 13, Minn.

AIR CONDITIONING HEATING

REFRIGERATION

Circle No. 11 on Reader Service Card

# If your prospect acts like this



suggest time payments



to clinch the sale



TODAY the demand on working capital is heavy. Preferring to keep their cash and usual lines of credit intact for current operations, more and more of your prospects will want to finance their purchases of equipment. Be sure your proposals are complete by including information about buying on the nationally

popular COMMERCIAL CREDIT PLAN. To discover how COMMERCIAL CREDIT'S tailor-made Refrigeration Financing Plan can help you build prestige and close sales, call our office in your city or write COMMERCIAL CREDIT CORPORATION, 14 Light Street, Baltimore 2, Maryland.

COMMERCIAL CREDIT CORPORATION • A service offered through subsidiaries of Commercial Credit Company, Baltimore . . . Capital and Surplus over \$190,000,000 . . . offices in principal cities of the United States and Canada.



#### **Welcome News!**

#### Easy-to-apply KWIKWRAP Tape from "VIRGINIA"

Yes, both old and new friends of "Virginia's" Presstite Insulation Tape will welcome the new Kwikwrap Tape, packaged in 30-in. flat strips for an easier, quicker, neater way of covering cold pipes to prevent condensation and stop dripping. Hot pipes up to 200°F. can be insulated, too. Kwikwrap is especially handy when space around the pipe or tubing is too limited to permit

HOW KWIKWRAP TAPE

IS PACKAGED

passage of a regular roll of tape. Kwikwrap is applied horizontally (see photograph above).

Kwikwrap is supplied in six widths, each designed to exactly cover a specific tube or pipe size—½ to 1 ½ inches OD. Strips are applied so that the end of one joins to the end of the one before it; they will self-seal when pressed together.

#### th for ¼ in. OD 2 Carton of 24 30-in. x ¼-in. strips th for ¼ in. OD sufficient for covering 60 lin. ft.

idth for 1½ in. OD didth for 1½ in. OD did wholesale—or write us today for full deadly

Refrigeration Division
VIRGINIA SMELTING COMPANY

236 Jefferson St. West Norfolk, Va.



ESOTOO • KINETIC CHEMICAL'S "TREON" REFRIGERANTS V-METH-L•CAN-O-GAS-PERMAGUM-PRESSTITETAPE-KWIKWRAP SUNISO REFRIGERATION OILS • WATER THEATMENT CHEMICALS Available in Canada and many other countries

# WOLVERIN

ROLL TUBE costs more gives

#### ROLL IT

#### CARRY IT

#### OPENING



Because Roll-O-Tube is round you can roll it to the truck-on the jobor wherever you happen to need it.



Roll-O-Tube makes carrying easy, too-all you do is slip your arm through the convenient center hole—and away you go.



There's no trouble here - just unzip the gummed tape around Roll-O-Tube's outer edgethat's all there is to it.

#### IDENTIFICATION

#### • USE IT AS A REEL . PROTECTION





To get a straight kinkfree line with Roll-O-Tube all you do is fasten your tube at one end and reel the carton back. It's easy—"reel" easyf



tube-just leave it in the carton protected from both damage and dirt.

QUALITY You can't buy finer copper tube than Wolverine. It's clean, bright, easy to bend -Tubemanship-built for long trouble-free installations.

ALWAYS ASK YOUR WHOLESALER FOR WOLVERINE ROLL-O-TUBE BUY FROM YOUR WHOLESALER

CALUMET & HECLA, INC.

CALUMET DIVISION WOLVERINE TUBE DIVISION
CANADA VULCANIZER
B EQUIPMENT CO LTD.
FONEST INDUSTRIES DIVISION
GOODMAN LUMBER CO.



#### WOLVERINE TUBE

Division of Calumet & Heela, Inc. 1405 Central Avenue, Detroit 9, Michigan

arers of Quality Controlled Tubing and Extraded Alumin Shapes

PLANTS IN DETROIT, MICHIGAN, AND DECATUR, ALABAMA. SALES OFFICES IN PRINCIPAL CITIES,

EXPORT DEPARTMENT, IS EAST 48TH STREET, NEW YORK IS, NEW YORK

Circle No. 54 on Reader Service Card

2445

#### MUELLER BRASS CO.

cavalcade of champions

the best performers in the refrigeration and air conditioning league

Real champions in their field are Streamline. refrigeration and air conditioning products you'll give them the best score for performance in your installations, tool



diaphragm line valves



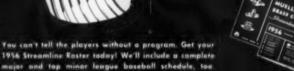
copper tubing

Clean, bright Streamline copper tubing is right down your alley. In coils or straight lengths, it's easy to handle, and ready to roll.

These new Mueller Bross Co. Linemaster diaphragm line valves are No. 1 in the country. With their tough Nylon seating discs and unique triple-diaphragms they'll give

you the kind of performance you expect of

You won't ever be stymied about liquid level when you use these Streamline Liquid Indicaters a quick ylante tells you at retrigerant shortage or restriction in the line.



MUELLER BRASS CO. PORT HURON MICHIGAN

Circle No. 15 on Reader Service Card

181



#### Seeks Information on Obsolete Equipment

Farron:

On looking through your CATALOG OF CATALOGS I find the name of the Electric Power Equipment Corp. of Philadelphia, Pa., missing.

One of my customers has one of this firm's condensing units on a walk-in cooler, and I am not sure what kind of compressor it uses.

Do you people know who I can write to, as it must be that this company is no longer in business? I thought maybe if they had sold out you might know who they sold to.

CARL D. SAVAGE Alger-Luce Refrigeration Grand Marais, Mich.

The Electric Power Equipment Corp, went out of business several years ago. We do not know of any place where a supply of replacement parts for these units can be obtained. Perhaps the refrigeration wholesaler from whom you regularly buy your supplies can help you, or suggest to you alternate replacement equipment that would do the job.

#### Caracas Firm Seeks Water Cooler Franchise

EDITOR:

We are interested in getting an exclusive distribution of electric water coolers, but prefer to deal directly with the manufactures of them rather than through export representatives, etc.

Blanco Penalver & Cia. Caracas, Venezuela

#### Needs Help to "Freshen Up" Freezer

EDITOR

I receive your magazine every month and I think it's tops. I have a freezer problem. Will you please help me? I have a freezer that was

# YOUR NO. I SOURCE OF SUPPLY AND AUTHORITY ON... SILVER BRAZING ALLOYS

The remarkable ability of the low-temperature EASY-FLO and SIL-FOS silver brazing alloys to make permanently leak-tight, normally indestructible joints at surprisingly low cost—sums up the reasons why silver brazing is now so extensively used in the Refrigerating and Air Conditioning industries. As pioneers and leaders in silver brazing alloy research, development and production, and originators of the time-labor-cost-saving EASY-FLO and SIL-FOS silver alloys, Handy & Harman is The Place To Go for silver brazing alloys and for technical and practical assistance in selecting the right alloy and in applying it most effectively and profitably.



A TYPICAL EXAMPLE... Silver brazing return bends on a condenser. SiL-FOS rings are positioned on ends of bends. Bends are then assembled on condenser tubes and gas-air brazed, 3 rows at a time — 40 joints — in less than a minute.



#### Full cooperation always at your call

Handy & Harman "Specially Qualified" Distributors cover the country. There's one near you, backed by H&H field service engineers, ready to supply you with informative silver brazing literature and help you in every way to apply silver brazing to your metal joining work.



#### HANDY & HARMAN

oneral Offices: 82 Fulton St., New York 38, N. Y. DISTRIBUTORS IN PRINCIPAL CITIES OFFICES and FLARES REIDGEPORT FORM

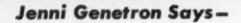
FRINTERSON IN

CHEVALAND THE SPECIAL STATE

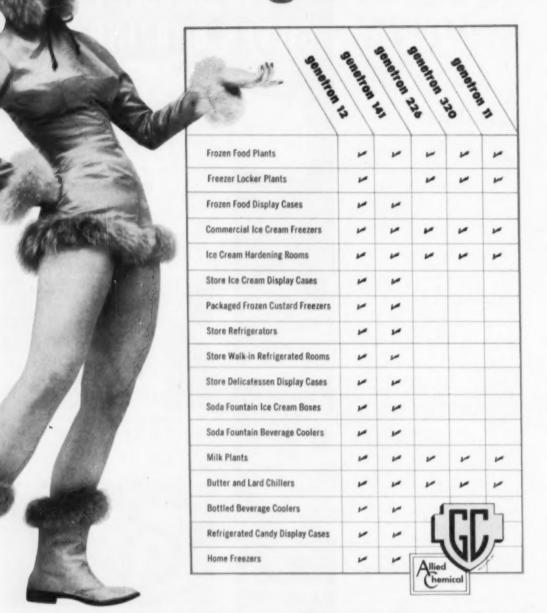
LOS ARMONES FALE

COMMISSION FALE

COMMISSI



## There's a genetron



#### GENETRON QUALITY SPECIFICATIONS

#### genetron 12 WHITE LABEL DICHLORODIFLUOROMETHANE

Quality Specifications

Moisture wt. %, max 0.0010
Chlorides none
High boiling impurities-vol. %, max., 0.01
Noncondensable gases (gases
insoluble in perchloroethylene)-
vol. % in vapor phase, max 1.5
Boiling pt. at 760 mm. Hg °F max21.6
Boiling range °F (to 85% pt.), max 0.5

### genetron 141 GREEN LABEL MONOCHLORODIFLUOROMETHANE

Quality Specifications

Moisture wt. 76, max
Chlorides none
High boiling impurities-vol. %, max 0.01
Noncondensable gases (gases
insoluble in perchloroethylene)-
vol. % in vapor phase, max 1.5
Boiling pt. at 760 mm. Hg °F41.4
Boiling range °F (to 85% pt.), max 0.5

#### genetron 226 PURPLE LABEL TRICHLOROTRIFLUOROETHANE

Quality Specifications

Moisture wt.	%.	max			0.0025
Chlorides					
Boiling pt. at	76	0 mm.	Hg "F.		117.6
Boiling range	°F	(to 85	% pt.),	max	1.8

# SUPER-DRY Refrigerant for Every Frozen Food Use!

(INCLUDING YOURS!)

## QUICK FACTS ABOUT GENETRON SUPER-DRY REFRIGERANTS FOR THE FROZEN FOOD FIELD

- Guaranteed exceptionally low moisture content
- Non-corrosive to standard equipment materials
- Non-toxic, non-flammable, stable, safe
- Critical and freezing points well outside range of operating uses
- Solvent action on oil helps prevent solidification or congealing of lubricant
- Aid in lubrication of equipment; generally miscible with oil
- Freely interchangeable and may be mixed in any proportions with comparable fluorinated hydrocarbon refrigerants meeting the same strict refrigerant specifications
- Approved and certified as original or replacement charge by leading refrigeration equipment manufacturers
- Available everywhere . . . see your refrigeration wholesaler

For further information
SEE YOUR REFRIGERATION WHOLESALER
or call or write

genetron DEPARTMENT

#### GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.



**Quality Specifications** 

Moisture wt. %, max	.0010
Chlorides High boiling impurities-vol. %, max.	none
Noncondensable gases (gases	0.01
insoluble in perchloroethylene)— vol. % in vapor phase, max	1.5
Boiling pt. at 760 mm. Hg °F	37.6
Boiling range of (to 85% pt.), max	0.5

Also

#### GENETION 11 ORANGE LABEL

Widely used in industrial and commercial refrigeration and air conditioning.

> NOTE: The quality of current "Genetron" production consistently surpasses the rigid manufacturing specifications listed.



For frozen food plants, freezer locker plants,



For refrigerated display cases



For soda fountain ice cream boxes, beverage coolers, packaged freezers

For walk-in refrigerated room



full of food. During vacation the fuse blew, the food defrosted and spoiled. The odor in the box is terrible. Have tried everything to freshen it up. What should I use? Does it have to be torn down and new insulation installed?

TAD BARKER Modern Appliance Service Bangor, Mich.

#### Portable Air Conditioner

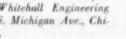
Entron:

I am looking for the name of manufacturer of the portable air conditioner (refrigerating type) that can be moved about the house and am hoping that you might have such information.

> ALVIN H. BLOODWORTH Upland, Calif.

The portable air conditioner that you refer to is known as the "Kool-A-Bout" and is manufactured by Whitehall Engineering Co., 1630 S. Michigan Ave., Chicago 16, Ill.

BUY FROM YOUR REFRIGERATION WHOLESALER



We would appreciate any information you could give us in regard to this program. Specifically, if possible, who is sponsoring the program and who of the individuals we might contact in order to get more information about it.

Seeks More Data on

"Ideal Learning" Program

In the "BTU's" section on page 47

of your June 1956 issue, you pub-

lish a note on a research program

being conducted by the Air Force

Academy directed toward establish-

ing the criterion for the ideal learning environment. As manufacturers

of heating and ventilating equipment for schoolhouses, we are very much

interested in this subject.

S. W. MILLER John J. Nesbitt, Inc. Philadelphia, Pa.

The Air Force Academy Research Program is being conducted by the Air Force Academy Construction Agency in cooperation with Minneapolis-Honeywell Regulator Co. Colonel Albert E. Stoltz is director of the Air Force Academy Construction Agency, which, we understand, is located at Colorado Springs, Colo.

#### "Don't Take 'No' " Article Reprints Requested

EDITOR:

The article "Don't Take 'No' For An Answer" on pages 78-79-80 of your July issue is of such interest that I am wondering if reprints (about 50 copies) are available for distribution to our factory sales representatives.

I am sure most of our people read your publication, but I want to make sure as far as this article is concerned.

E. H. NORLING General Electric Co. Bloomfield, N. J.

Reprints of the article are not available, but reproduction is permitted provided proper credit is given.

#### No Hablamos Espanoll

Entron:

One of our clients advises us that you used to publish a magazine on refrigeration in Spanish.

We would appreciate your advising if you are still publishing this maga-



When water gets out of control and floods cause loss of life and endless property damage, then we begin to realize that water is a good servant but a poor master, and we take steps to avoid recurrence of such disasters.

In the same way, It is good business to take steps to avoid water troubles in refrigeration systems. By use of Thawzone, the moving dehydrator, which travels unceasingly throughout the system, water is found and destroyed quickly, no matter where located.

#### THAWZONE HAS ALL THE ADVANTAGES:

- Actually destroys moisture . . . not a mere anti-freeze
- 2. Scavenges oxygen overcome the harmful effect of traces of oxygen which may re-main in a refrigeration system after the usual purging.
- 3. Cannot cause pressure drop.
- 4. Does not release moisture when temperature changes.
- 5. May be used in open or her metic units containing any of the "Freons", methyl chloride, methylene chloride or isobutane.
- 6. Costs only about 8 cents per lb. of refrigerant treated. Used in minute amounts.



Why don't you try a 1 as. bottle of Thawsone? Also available in 4 as. and pint bottles. Call your wholesaler.



#### Stewart Industries. Inc.

(Formerly HIGHSIDE CHEMICALS CO.)

4 Colfax Avenue, Clifton, N. J.

# Qwik |

# Change

with PACKAGED MOTOR STARTER PARTS!



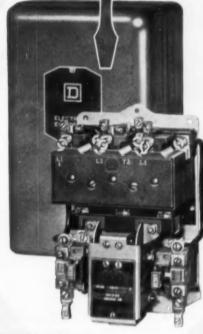
#### INTERLOCKS

A wide variety of quick-change, front-mounted interlocks adds flexibility for special applications



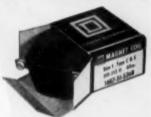
#### CONTACTS

Packaged replacement contacts are easily installed without disturbing wiring



#### PUSH BUTTONS AND SELECTOR SWITCH

These Kits contain all parts necessary to make quick changes from standard starters to either push button or selector switch controlled devices



#### COILS

Screwdriver is only tool required for quick change of magnet coil to accommodate different voltages



#### O. L. RELAYS

A wide variety of easily selected, packaged overload relay heater units provides quick changes to meet varying requirements for overload protection





NOW...EC&M PRODUCTS ARE A PART OF THE SQUARE D LINE!

SQUARE D COMPANY

Circle No. 19 on Reader Service Card



## BENDIX-FRIEZ HYGRO-THERMOGRAPH

... helps you do a better job selling, installing and servicing

The Bendix-Friez\* Hygro-Thermograph automatically records temperature and humidity on one chart. Gives you the facts that will help solve heating and air conditioning problems. Handy adjustment allows choice of 1-day or 1-week operation.

Case is hinged for easy loading and unloading. Chart is calibrated to cover a range of 0 to 100% relative humidity. Temperature ranges are  $+10^{\circ}\text{F}$ . to  $+110^{\circ}\text{F}$ .;  $-30^{\circ}\text{F}$ . to  $+70^{\circ}\text{F}$ .; and  $-12^{\circ}\text{C}$ . Special model available for use under extremely corrosive conditions. Proven favorite with heating and air conditioning engineers and servicemen.

Write today for complete information. No obligation, of course.

\*Reg. U. S. Pot. Off.



FRIEZ INSTRUMENT DIVISION - BENDIX A'/IATION CORPORATION
1410 TAYLOR AVENUE BALTIMORE 4, MARYLAND
Export Sales and Service: Bendix International Division, 205 E. 42nd Streat, New York 17, N. Y., U. S. A.

zine, and would like to receive a sample copy and subscription rates. KNULL & WETZLER Estomba 1783 Buenos Aires, Argentina

We discontinued the Spanish edition of our magazine several years ago. To our knowledge, there is no refrigeration magazine in the Spanish language being published in the United States at the present time.

#### Here is Information on Popsicle-Making Machinery

EDITOR:

I would like to know if you can give me information in regards to a machine to make popsicles. If you will send me the names of some companies making this equipment I will write them for more information.

WILLIAM LUKOSAVICH Groton, N. Y.

Manufacturers who make equipment of this type include: Popsicle Service, Inc., 601 West 26th St., New York, N.Y.; Vitafreeze Equipment, Inc., 6601 Eastern Ave., Sacramento, Calif.; Package Machinery Co., Putnam Building, Springfield, Mass.

#### Trade Name Identified

EDITOR:

Can you give me the address of the company that makes the "Wassco" soldering pliers?

A. W. REYNOLDS
Plant Engineer
San Antonio State T.B. Hospital
San Antonio, Tex.

This product is made by Wassco Electric Products Corp., Joliet, Ill.

#### HENRY FURNACE SUPPLY IS YORK DISTRIBUTOR

Henry Furnace Supply Co., Columbus, Ohio, has been franchised to distribute York commercial and residential air conditioning in a 14-county area. Henry Furnace Supply Co. is owned by Mrs. Lillian E. Spoerlein. George Marshall, former York sales engineer, will conduct the company's sales promotion program.

## ALL-NEW TORCH-O-MATIC

(Type AB)

- · BATTERY IGNITED
- · ON-OFF OPERATION
- · FULLY AUTOMATIC
- . COMPLETELY SAFE
- \* SAVES GAS
- . SAVES TIME

Add safety and economy to dozens of heating, soldering, sweating and brazing operations with the new AB Torch-O-Matic. Safety-wise, there's the on-off gas switch with finger-tip control. Switch has no lock-on position, so there's no danger of fires or injuries when Torch-O-Matic is laid down between jobs.

Economy-wise, the instant ignition feature means no time lost lighting up or adjusting

controls on those stop-and-go jobs. Slender, well-balanced design and light weight eliminate hand fatigue... speed up work on maintenance and production schedules.



Tip of torch is angled for greater flexibility in directing flame to precisely the right spot on working area.



Automatic shut-off feature keeps both hands free for worker; also saves gas because torch burns only during in-use time.

WRITE FOR DETAILS TODAY

#### VELOCITY POWER TOOL CO.

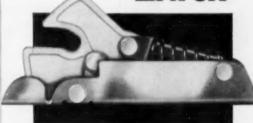
201 North Braddock Avenue \* Pittsburgh 8, Pa.

Circle No. 79 on Reader Service Card & AIR CONDITIONING • SEPTEMBER, 1956

#### NATIONAL LOCK

introduces the exclusive new

SAFETY



#### for refrigerators

- SAFETY-LATCH IS RELEASED BY PUSH ON INSIDE OF DOOR...
   OR PULL ON OUTSIDE OF DOOR
- USED WITH INOPERATIVE DOOR
   HANDLE AND ROLLER-TYPE STRIKE
- NO HANDLE ACTUATING DEVICE NECESSARY
- CLOSING DOOR RELOADS LATCH REGARDLESS OF POSITION OF BOLT
- ASSURES POSITIVE LATCHING ACTION FOR REFRIGERATOR DOORS
- MOUNTED VERTICALLY OR HORIZONTALLY ON RIGHT OR LEFT HAND DOORS
- NO LINKAGE PROBLEM... PROVIDES NEW FREEDOM IN HANDLE STYLING
- SMALL, COMPACT, LOW IN PRICE TOOLED AND READY FOR SHIPMENT

Write for sample and technical data on the outstanding new SAFETY-LATCH Series 59-844. National Lock engineers will work with you in creating all types of quality appliance hardware.



#### NATIONAL LOCK COMPANY

ROCKFORD, ILLINOIS REFRIGERATOR HARDWARE DIVISION

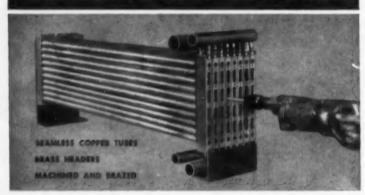
Circle No. 78 on Reader Service Card

#### WE KEEP WATER-IMPURITY WORRIES AWAY

. . . because . . .

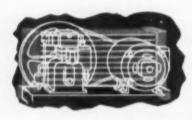


### this Condenser is CLEANABLE



### a cleanable clean condenser --- always high heat-transfer capacity

We make CLEANABLE Condensers to leave you free from the worry that lime or other impurities are coating the inside of your condenser tubes . . . are cutting heat transfer capacity . . . are raising power bills.



Because CLEANABILITY avoids progressive fouling of water tubes, Halstead & Mitchell water-cooled condensers can be designed around the most efficient . . . and most economical . . . area of copper heat transfer surface. Thus your first bonus is in original investment—CLEANABILITY at no extra price.

No matter how severe water conditions may be, a simple mechanical cleaning tool puts a Halstead & Mitchell CLEANABLE Condenser back to operating with new-unit efficiency in a matter of minutes. Thus, your second bonus—long, low-cost, trouble-free life.

Most leading manufacturers have long recognized the need for, and economy of CLEANABILITY in all sizes. It will pay you to take no less!



WORLD'S LARGEST
MANUFACTURER OF
DOUBLE-TUBE,
COUNTER-FLOW,
CLEANABLE
CONDENSERS

1/3 thru 25 TONS

# INSTALL IN PAIRS

and get <u>positive</u> performance!

Installed together, this popular A-P pair gives you both control and protection on all types of refrigeration and air-conditioning applications. It's the basis for economical, trouble-free positive performance. Always install A-P products and be positive of the results!



POSITIVE CONTROL

Model 207C Thermostatic Expansion Valve operates at any temperature . . . in any position

EXCLUSIVE A-P LIQUID CHARGE makes valve ideal for all applications . . . low temperature, commercial or air-conditioning. Versatility means fewer valves to buy.

MAINTAINS "STRAIGHT-LINE" SUPERHEAT — less than ½° superheat variation from -20° to +40°F suction temperatures.

AVAILABLE WITH OR WITHOUT EXTERNAL EQUALIZER—for popular Freon 12, Freon 22 and Methyl Chloride . . . in 1/2 and 1-ton sizes.

NEW SMALL SIZE PLUS EASE OF INSTALLATION make it a real boon to servicemen. Fits handily in those hard-to-get-at corners.



POSITIVE PROTECTION

Model 410 Trap-Dri — with PA-400 refrigeration gel added — absorbs more water than ever!

- PA-400 refrigeration silica gel reduces moisture level of F12 to less than 10 ppm, at temperatures as high as 160°F. Gel is non-dusting, . . completely non-corrosive. Is not affected by oil in system.
- operates on "depth filtration" principle — removes gummy deposits, sludge, scale, dirt, solder.
- Assures 100% trouble-free valve operation . . . prevents valve freeze-ups.

· Positive-acting honey comb filter

Carried in stock by most Jobbers

A-P CONTROLS DIVISION

2486 N. 32nd Street, MILWAUKEE 45, Wisconsin COOKSVILLE, Ontorio NIJMEGEN, Holland

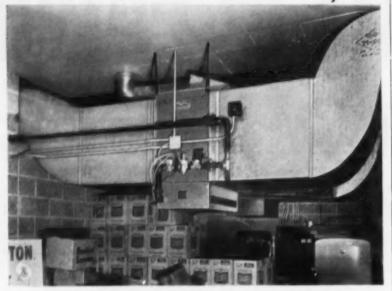
DEPENDABLE Controls

For Air . Liquids . Gases . Refrigerants

Circle No. 23 on Reader Service Card

& AIR CONDITIONING . SEPTEMBER, 1956

## Corrosion-free year-roung



#### Modine STAINLESS STEEL Gas-Fired Duct Furnace

UNMATCHED for central and "booster" heating and ventilating-the Modine Gas-Fired Duct Furnace is ideal for use with cooling coils and packaged air conditioners.

Rust-resistant stainless steel burners and heat exchangers eliminate problems of corrosion encountered with conventional units. Five sizes -88,000 to 213,000 Btu/hr input.

#### Only Modine gives all these advantages

Longor service life - Stainless steel construction resists rust, scale, moisture . . . cuts maintenance . . . expands application possibilities.

Faster heat transfer - Seam-welded, gas-tight heat exchanger and directfired tubes give instant heat.

Solf-cleaning burners - Large, knife-sharp ports have four times the area of drilled ports . . . prevent lodging of dirt and scale. Burner unit can be removed for inspection, service.

fusy access - All controls are mounted on side of unit for easy inspection and service, regardless of furnace location. Airflow is reversible, permitting side-by-side installation.

Lightweight - Stainless steel construction reduces weight . . . units handle easily, cost less to install.

Varied applications - Ideal as central heaters . . . boosters . . . with air conditioners . , and for industrial and agricultural drying . . . processing . . . and ventilating.

For facts, see the Modine representative listed in your classified phone book or write Modine Mfg Co., 1584 DeKoven Ave., Racine, Wis., for Bulletin 855.



Modin

STEEL DUCT FURNACES



by Albert Woodruff Gray

egal problems are an inherent part ogni proteins are an inneren pair
of operating any business enterprise. If you are beset by them, you'd
better talk to your lawyer. This column,
which appears periodically in the
issues of COMMERCIAL REFRIGER. ATION AND AIR CONDITIONING, in no way aspires to serve as legal counsel for our readers. It is prepared, however, by a man well versed in legal practices and opinions, and by presenting digests of actual court cases involving commercial refrigeration and air conditioning dealers and contractors we hope to enable our readers to sidestep some of the legal pitfalls into which they otherwise might unwittingly stumble.

The Editors

#### RESCISSION OF PURCHASE CONTRACT

NDER a conditional sale agreement for the purchase of a refrigerator, made by the owner of a delicatessen store, \$75 was paid in cash, the balance to be paid in 24 equal monthly installments.

Immediately upon the installation of the equipment trouble arose. Temperature required for the proper preservation of foods was 38 to 48 F. The lowest temperature obtainable from this refrigerator was 45 to 56 F. Repeated efforts by the dealer to remedy the defect ended in the demand by the purchaser that the refrigerator be removed.

The answer of the dealer was a suit for the unpaid balance, to which the delicatessen owner set up as a defense the failure of the machine to perform the work for which it was puchased.

In sustaining the defense the court said, "It is common knowledge that a refrigerator is manufactured and intended for the purpose of keeping food products in a wholesome condition and preventing their spoilage. This it did not do and therefore the refrigeration equipment was of no value at all to the purchaser. This fact could not have been foreseen before the installation of the equipment.

"Where the thing tendered is, by reason of non-conformity to the schler's guarantee, inadequate to the



Architect Louis C. Hinckley General Contractor E. J. Pinney Co.

Air Conditioning Contractor Simons Burner & Petroleum Co.



# 240

## POINTS of CONTROL

## ON BUSH AIR CONDITIONING INSTALLATION

That's how the contractor describes the BUSH air conditioning system at the new Medical Center, Springfield, Mass.

Entire building is conditioned with BUSH units. 'CR' Remote Air Conditioning Units... 240 of them... provide year 'round comforts heating in winter, cooling in summer and between-season circulation of filtered air. Units are individually adjustable to suit room occupant's preference or a particular area's requirements. Shallow depth enhances room appearance, saves valuable floor space.

Interior zone conditioning of waiting rooms, corridors, etc. is accomplished by 4 Bush Air Handling Units . . . 2 of the vertical floormounted type and 2 horizontal ceiling-hung models. These versatile units are available in a wide range of capacities and with extraefficiency Inner-Fin coils — exclusive with BUSH.



BUSH

Write for descriptive literature on these and other Bush Air Conditioning and Refrigeration units . . . most complete line in the industry.

BUSH MANUFACTURING COMPANY · West Hartford 10. Connecticut

RIVERSIDE · CALIFORNIA

Circle No. 25 on Reader Service Card



A MODEL FOR EVERY NEED!

Give your customers the widest choice! Select from the Temprite line of 14 different models, including new small economy-size Cadet coolers!



Temprite Compartment Coolers are available for either bottled water service or connection to water supply. Model PCF (Illustrated) provides 3-way service perfectly cooled drinking water, 2 large trays of ice cubes plus cooks yet/largeted storage source.

Make a hit every time with the No. 1 water cooler line!

#### Standout Quality!

Temprite Water Coolers are made better to last longer . . . precisionengineered by liquid cooling experts to provide years of trouble-free service!

#### 2 Styled to Appeal!

Temprite's smart, functional styling enhances any setting. Extra deep, antisplash basin features stainless steel beauty and matchless durability.

#### 3 Finest Features!

Temprite offers all these sales-building features: All-welded angle steel frame. Dual thermostats for accurate temperature control, double protection against accidental freeze-up. Hermetically sealed, lifetime-lubricated compressor. Removable front and side panels for extra easy servicing.

Temprite	Temprite Products Corporation P. O. Bex 72-8 • E. Maple Read • Birmingham, Mich. Please send me complete data on Temprite Self- Contained Water Coolers. NAME
SINCE 1929	ADDRESS STATE STATE

Circle No. 26 on Reader Service Card

purpose for which it is sold, the buyer is entitled to repudiate the transaction and the statutory provision permitting rescission for failure of consideration is applicable.

"The failure of consideration was total, as it appears that the refrigeration equipment was of no use for the purpose for which it was purchased and generally used. Where the failure of the consideration is total—which implies, of course, that nothing of value has been received under the contract by the party seeking to rescind—it is not necessary that a formal rescission be made before bringing suit."

Hot-N-Kold Corp. v. Todd, 288 Pac. 687. California

#### SULPHUR DIOXIDE INJURY

JUDGMENT for \$30,000 was recovered by an employee of a dealer in electric refrigerators for injuries he had received. In repairing these refrigerators it was frequently necessary for this employee to purge them of the sulphur dioxide refrigerant. The employee charged that he had neither been warned nor protected from the effects of this gas. As a consequence his lungs had become inflamed, tuberculosis had developed and he was disabled for life.

In its defense the dealer contended that it had neither knowledge nor notice of the serious harm to which this employee was exposed. In sustaining the jury's verdict in favor of the employee the Mississippi court said.

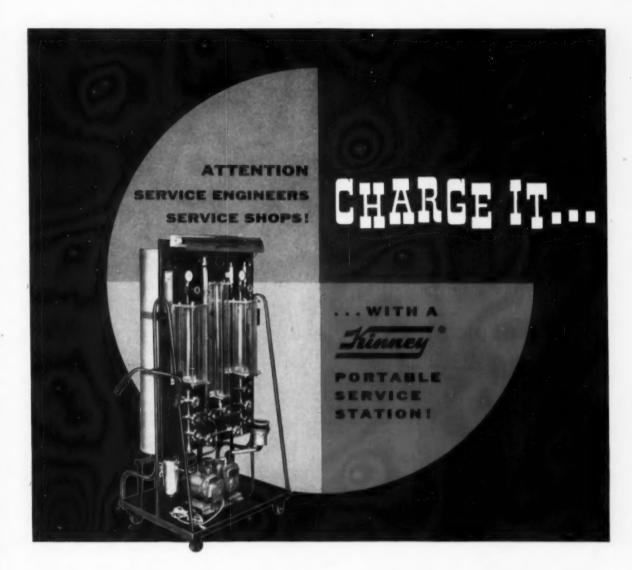
"The master is charged with knowledge of the usual and ordinary dangers and hazards to which he is exposing his employee and is bound to know the nature of the constituents and general characteristics of the substances used in and about his business or any part thereof wherein an injury may occur or has occurred and this rule is applied without question in cases of the use of dangerous chemicals."

Mississippi Power Co. v. Stribling, 3 So. 2d 807, Mississippi

#### FITNESS FOR PURPOSE

A FTER the purchase and installation of a refrigerated display case by a Georgia market owner under a conditional sale contract, the fresh meats and other perishable foods that were placed on the top shelf were spoiled from lack of refrigeration.

When suit was brought by the seller to recover under this agreement the market owner set up a defense that the dealer had induced him to execute a contract for the purchase of this case by fraudulently warranting and promising that the case would reach



HERE'S YOUR CHANCE to duplicate original equipment (household refrigerators, home freezers, air conditioning units, etc.) manufacturers' exacting CHARGING specifications with portable service stations that put more profit into your servicing jobs. These fully mobile units provide productionline performance during reconditioning . . . with adequate evacuation and dehydration assured by a high-precision vacuum system.

#### THE NEW YORK AIR BRAKE COMPANY 3010 WASHINGTON STREET - BOSTON 30 - MASS.

• Please send Brochure describing Kinney Portable Service Station and Accessories.

Name	Title
Company	
Street	
City	State

Design offers a quick and visible means of accurately charging refrigerants as well as, when desired, other supplementary liquids. Integral design assures leak-proof operation of all components . . . Kinney Model KC high vacuum pump, Freon cylinder holder, calibrated charging board, and leak-free vacuum manifold.

These high quality, dependable units reflect Kinney's years of leadership in the vacuum field. Request complete data today . . . or contact any of our competently staffed district offices . . . in Baltimore, Charleston, W. Va., Charlotte, N. C., Chicago (La Grange), Cleveland, Detroit, Houston, Los Angeles, New Orleans, New York, Philadelphia, Pittsburgh, San Francisco, St. Louis, or The International Sales Office, 90 West St., New York 6, N.Y.

write today!

#### End PIPE CONDENSATION **PROBLEMS Forever**



cool surrounding oirprevent exterior condensation

**¼-INCH THICKNESS** 

Air-tight, self-sealingfor utmost insulating efficiency

INSIDE

Dead air is trapped between corrugated" strands, forms added insulation barrier

Only NoDrip Tape offers you triple insulation stops condensation drip forever-makes waste space completely useable-gives you easiest, labor-saving installation.

NoDrip Tape is a pliable, cork-filled 8-strand covering...self-adhering, becomes a sealed pipe jacket the instant it's pressed in place. 100% vapor and moisture proof.

Requires no vapor-seal tapes or over-wraps. No fasteners, tools, brads or adhesives. Winds spirally around any tubing or pipe-around joints, tees, valves or angles. No experience needed...anyone can apply NoDrip Tape.

SOLD THROUGH LEADING WHOLESALERS

#### FREE! Bulletin D-40

J. W. Mortell Company 553 Burch St., Kankakee, III., Dopt. 9 Please send me FREE copy of **Bulletin D-40** 

Name.

Address

State.



on its top shelf that would be necessary for the preservation of fresh When, a few months ago, the ap-

and maintain any temperature desired

pellate court of that state sustained this defense, it said, "Wilful conceal-ment of a defect in an article or inherent lack of quality in it is a species of fraud that renders all the provisions of the contract of sale subject to rescission. These facts present a presently existing deficiency or lack of quality in the refrigerator concealed by the seller's agent, of such a nature that had the purchaser known of it he would not have bought the refrigerator."

Warren Co. v. Starling, 85 S.E.2d 504, Georgia

#### ORAL PROMISE VOID

WHEN an air conditioning contion of equipment in a Michigan theater, a written contract was made between the theater owner and the contractor. At the time the contract was signed, the contractor objected to the absence of any clause in the contract under which he retained title to the equipment as security for the payment of the price.

He was assured by the purchaser, however, that there was \$4500 of the price of \$6750 waiting for him in the bank as soon as the installation was complete. "I figured," said the contractor later, "that I could take a gamble on the balance, which was \$2250."

After the machine had been installed, however, the promised \$4500 was not paid. "You have the same protection as though you had a title-retaining contract," the purchaser again assured him. Shortly afterwards the theater owner was bankrupt and the contractor sought to regain possession of his equipment.

In its refusal to enforce the oral agreement that the title remained in the seller the Federal Court said.

"The statement of the purchaser was at most merely a statement of his view of the legal effect of the written contract by which the contractor's representative knew as much as he. It was not a promise, but if it be assumed that it was there is nothing to show that it was accepted or that there was a consideration for it.

"When the seller performed his part of the contract the obligation of the purchaser to pay this sum matured. This obligation the seller had the right to enforce according to its terms but he could not create a new obligation or acquire new rights under the contract without a supporting consideration."

In re Trans-Lux Movies Corp., 79 Fed. 2d 692

BUY FROM YOUR REFRIGERATION WHOLESALER

# helps you sell THE AMAZING 2-IN-1 Trystal Tips- or Chips-

AUTOMATIC ICE MAKER





#### Does Double Duty and Does It Setter!

Every user of ice is quick to see that the amazing Crystal Tips or Chips Ice Maker does the job of two for the price of one—Tips in "cube" size, or with the turn of a knob. Chips in crushed size. At a cost of only a few cents a bushell It's the ice maker with all the most wanted features: Uniformly-sized ice, quiet operation, full 24-hour storage bin capacity, space caving design, and a simplified trouble-free mechanism. Write for information.

#### AMERICAN AUTOMATIC ICE MACHINE CO.

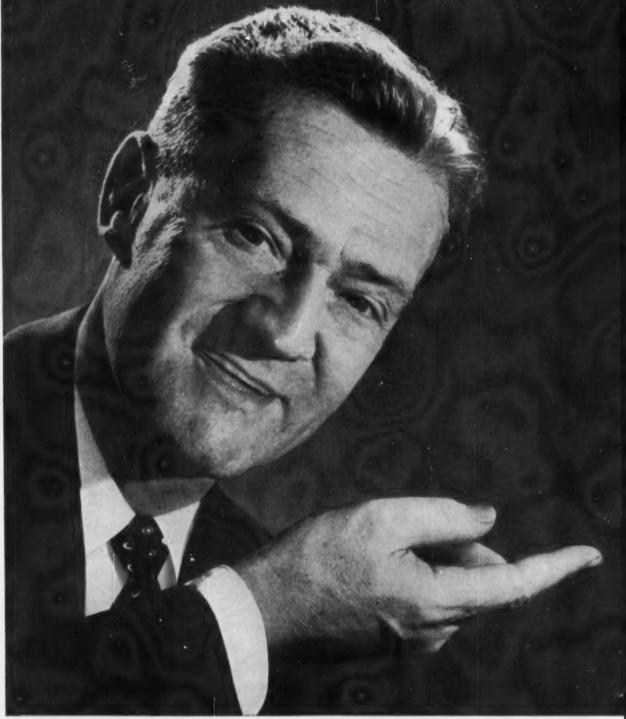
1776 Fourth Street N. W., Fertbeult, Minn. - A Subsidiary of McQuqy, Inc.

See your



## AMERICAN-Standard distributor! . . .

AIR CONDITIONING DIVISION



Circle No. 30 on Reader Service Card
SEPTEMBER, 1956 • COMMERCIAL REFRIGERATION

### ..... He's the man with the complete

# DEALER PROFIT PROGRAM

No half-way measures . . . no half-way profits when you join up with your distributor of American-Standard Air Conditioning Division products. You'll find that he's a *specialist* in warm air heating, summer cooling and year 'round air conditioning . . . with a complete, top quality product line plus full technical and pro-

motional service. He has everything you need to build your reputation as a specialist . . . to sell constructively . . . to sell in volume. Contact him for the Complete Dealer Plan—he's listed in your classified telephone directory under "Furnaces" and "Air Conditioning Equipment". Or, if more convenient, just mail the coupon.

## Complete product lines

HEATING. Gas-fired and oil-fired winter air conditioners in basement, utility, counterflow and horizontal models . . . all sizes. Also coal-fired winter air conditioners and gravity furnaces, oil burners and gas burners.

#### COOLING AND YEAR 'ROUND.

American-Standard is now the largest residential line on the market! Full range of water-cooled add-on and package models; 2, 3 and 5 hp air-cooled outdoor condensing units plus vertical, counterflow and horizontal air-flow and blower-equipped evaporators. Large selection of heating-cooling combination units equipped for gas or oil firing with water-cooled or air-cooled summer air conditioning.

## Complete technical assistance

TRAINING CENTER at American-Standard Air Conditioning Division factory, Elyria, Ohio, provides intensive courses, both elementary and advanced, covering all phases of heating and cooling layout, installation and servicing. "HOW-TO" MANUALS. Complete, concise technical data are provided in easy-reference form; also, detailed installation and application manuals on each and every model.

FIELD SPECIALISTS. You work closely with your distributor's technical specialists who, in turn, are backed by American-Standard field and factory engineers. This means that you can approach even the most difficult equipment applications with confidence and authority.

## Complete promotion

DEALER IDENTIFICATION. "Authorized Dealer" Certificate, indoor and outdoor illuminated signs, window banners and many other impressive identification items are included.

**NEWSPAPER AD MATS.** Wide variety of heating, cooling and year 'round pre-tested ads and product cuts.

**SALES LITERATURE.** Dozens and dozens of colorful pieces to help you promote and sell effectively.

RADIO AND TV. One-minute spot announcements and recorded singing commercials for radio; one minute filmed commercials for TV.

destry's most liberal cost-sharing promotional program.

### American-Standard

AIR CONDITIONING DIVISION



American-Standard Air Conditioning Division (Dep't C-9) 40 West 40th Street, New York 17, N. Y.

Please have your nearest distributor present The Complete Dealer Plan.

NAME

STREET

Circle No. 30 on Reader Service Card



In a series of key personnel changes at General Motors Corp., Herman F. Lehman has been elected a vice president and also has been appointed to succeed Mason M. Roberts as general manager of the Frigidaire Div. Roberts has retired after 44 years with the corporation. Replacing Lehman as general sales manager of Frigidaire is C. H. Menge, formerly



H. Lehman

C. H. Menge

executive vice president of Eljer Co., Pittsburgh. Lehman, with General Motors 31 years, has served as commercial sales manager, manager of Frigidaire Sales Corp. in St. Louis, manager of commercial and air conditioning sales, and assistant general sales manager. Menge was directly responsible for all operations and sales at Eljer.

Stanley L. Abrams, assistant to the executive vice president



of Emerson Radio and Phonograph Corp., has been elected president and a director of Quiet Heet Mfg. Corp., wholly-owned Emerson sub-

sidiary, Abrams will head the corporation's Air Conditioner-Oil Burner Div, He succeeds John D. Small, who becomes Emerson's vice president in charge of government relations. Abrams has held several key positions since joining the firm in 1946.

Murry B. Johnson has been appointed sales manager of Pack-



less Metal Hose, Inc. Prior to his new position, Johnson was regional sales manager for Warner-Patterson, Chicago. Previously, he was with

Permutit Co., New York, as district manager.

Dr. Philip P. Anderson has been named director of development in absorption refrigeration for Carrier Corp.'s central Research and Development Div. Dr. Anderson comes to Carrier after 20 years with Servel, Inc., where he was director of advanced engineering.

Robert N. Stewart has been named sales manager for Frostrode



Products, Div. of Warren Alloy. Stewart's previous associations include: J. Geo. Fischer & Sons, sales manager; and district sales manager at

Servel, Inc., and International Harvester.

Seven new sales engineers have been assigned to district offices of Armstrong Cork Co.'s Insulation Division. The men joined the company in February as sales trainees and have recently completed a sales training course. Harland R. Caswell and Frederick F. Hauser will join the Chicago district office. Bobby R. Caudle has been assigned to Kansas City, Mo.; Bernard J. DeWolf, Detroit; Robert W. Hattemer, Pittsburgh; Donald W. Kuhn, St. Louis; and John T. O'Hara, Philadelphia.

J. H. Pearce has been promoted to the position of manager



of Styrofoam
Sales for Dow
Chemical Co.
Pearce replaces Robert
L. Curtis following the latter's recent
resignation.
With Dow
since 1948.

Pearce was sales supervisor for general chemicals in the company's Camden, N. J., office for the past five years. He also has served in the company's technical service and development organization and with the Camden office as a salesman handling general chemicals.

Si Williams has been appointed sales representative of Baltimore Aircoil Co., Inc. for northern Ohio and western Pennsylvania.

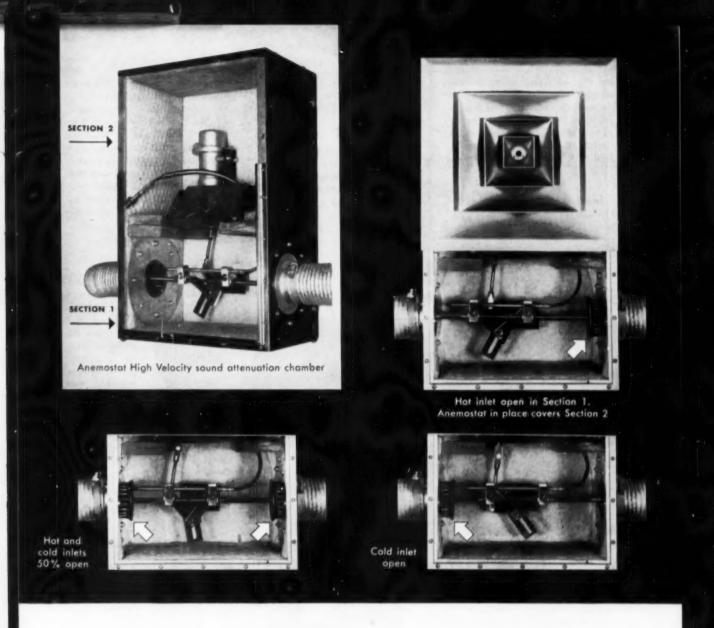
The appointments of Todd L. Owens as manager, advertising & sales promotion; and James M. Farrell, sales manager, room air conditioners have been announced







by Commercial Div., York Corp., a subsidiary of Borg-Warner Corp. Owens comes to York from Cros-



# How to mix and diffuse high velocity air automatically

The Anemostat High Velocity sound attenuation chamber is divided into two sections. Both hot and cold air from the main risers enter Section 1, which is an acoustically lined blending chamber, in which the volumes of air are controlled by the Anemostat serrated rocket-socket valves. When the thermostat is set, the rocket-socket valves move slowly back and forth, thereby adjusting the volume of air supplied through the hot and cold inlets. The velocity of the air which enters Section 1, at from 3500 to 6000 fpm, is automatically reduced by expansion.

As the blended air meets the temperature

requirements of the thermostat, it passes through a baffle arrangement into the acoustically lined Section 2 of the chamber, further reducing the db rating of the air.

The air then passes through the Anemostat Air Diffusers, where the aspiration effect causes mixing of room and supply air within the diffuser, resulting in further temperature equalization. The diffuser then delivers to the occupants of the room draft-free air at the desired temperature.

The Anemostat All-Air High Velocity distribution system offers other important advantages. It can be used with smaller than conventional ducts. It can be installed faster and at less cost. It requires no coils, thus eliminates leakage, clogging and odors. Furthermore, Anemostat round, square and straightline diffusers with high velocity units blend into a wide variety of architectural designs.

Write for 1956 New Products Bulletin and Selection Manual 50 to Anemostal Corporation of America, 10 E. 39 Street, New York 16, N. Y.

Anemostat: The Pioneer of All-Air High Velocity Systems ley Div. of Avco, where he was creative advertising manager for the full line of Croslev and Bendix products. Farrell was with Crosley as merchandising manager for all Crosley lines, having started as field sales manager of electronics.

Gordon Dronen has joined the Chicago-region sales staff of Airtemp Div., Chrysler Corp. Dronen will serve as district manager for Airtemp's commercial air conditioning products. He formerly was sales promotion manager for Airo Supply Co., Chicago.

Several personnel changes have been announced for Jordon Refrigerator Co., Inc. George B. Hewetson, formerly assistant comptroller at United States Air Conditioning Corp., has been appointed assistant treasurer. Joseph Di-Tullio, previously a project engineer, has been named chief refrigeration engineer. George Maguire, at Jordon since 1952, becomes director of personnel. Philip L. Robins moves from production manager to plant superintendent and production manager. James G. Surratt assumes the duties of sales promotion manager. Prior to his appointment. Surratt was zone manager for Deepfreeze until that firm ceased operations last March.

Carl W. Millsom has been named vice president in charge of



sales and advertising for Perfection Industries Div. of Hupp Corp. Prior to his present appointment. Millsom held the same position with

Acme Industries, Inc. He also was associated with Chrysler Airtemp for several years.

Karl W. Galliger has been appointed director of engineering



of New York Air Brake Co. He succeeds Thomas W. Johnson, Galliger will be responsible for company research and engineering. and for or-

ganization policies, procedures and development programs of the engineering departments of all divisions of the company. Galliger, engineering manager of the company's Watertown Div. since 1953. will headquarter in New York.

Three sales personnel changes have been announced at L. O. F. Glass Fibers Co. Don McAnally, sales promotion manager, has been elevated to manager of distributor sales. Fred W. Segerstrom, man-



that knurled cup at the bottom . . . so now you have one valve that will function equally well on either Freon 12 or Freon 22.

It's new and better in every way: Small and Compact, but with plenty of capacity, smooth modulation, positive operation, excellent flow characteristics. Valve may be manually flushed after installation to remove dirt and grit from

Quality construction throughout: Monel seat beads minimize wire drawing and prolong life. Direct acting bellows is leak proof.

Write for bulletin pointing out other brand new features.

#### MARSH REFRIGERATION EQUIPMENT CO.

Sales affiliate of Jas. P. Marsh Carp. DEPT. P SKOKIE, ILLINOIS Marsh Instrument & Volve Co. (Con.) Ltd. 8407 103rd St., Edmonton, Alberta, Con.

# Buy from your wholesaler Refrigeration Equipment

WATER REGULATING VALVES . SOLENGID VALVES . GAUGES

Circle No. 32 on Reader Service Card

# the hottest thing in temperature

LOWEST in operating costs, too!
Kramer's new "L" THERMOBANK saves important dollars every day it works for you. It's the only LOW temperature automatic hot gas defrost system that works trouble-free at any temperature level, from plus 32° to minus 75°. Let us prove that it costs less to own the best!

WRITE FOR MANUAL TV-320

KRAMER



# THERMOBANK

KRAMER TRENTON COMPANY Trenton 5, New Jersey

Circle No. 33 on Reader Service Card

& AIR CONDITIONING . SEPTEMBER, 1956

ager of transportation sales, has been appointed general sales manager of the company's General Products Div. H. Richard Harper has been named manager of industrial sales. Headquarters for all three men will be in Toledo.

Howard Alsop has been appointed a direct factory salesman for Lancaster Pump & Mfg. Co., Inc. Alsop will serve distributors in Georgia, North and South Carolina. His headquarters will be at 221 Hawthorne Lane, Charlotte, N. C.

Joseph Mason has been appointed manufacturer's representative of Federal Refrigerator Mfg. Co. Mason will represent Federal in Florida, Georgia, and Alabama.

BUY FROM YOUR REFRIGERATION WHOLESALER

Thomas H. Ford has been appointed assistant to the vice



president of Fedders-Ouigan Corp. Ford comes to Fedders from Whirlpool-Seeger Corp. where he was product manager, air conditioning de-

partment. Before that, he acted as product and engineering manager of the air conditioning division of

Frederick B. Seel has been promoted to an assistant manager of engineering at the Holyoke Div. of Worthington Corp. Prior to joining Worthington in 1951. Seel was with Westinghouse Electric Corp., and Firearms International Corp. Previous to his new appointment, he was chief engineer of the residential section of the Air Conditioning and Refrigeration Div.

Harry Kirby has been named district manager for Jas. P. Marsh



Corp., with headquar. ters in Cleveland. Kirby will direct sales in Ohio. Pennsylvania. and the greater portion of New York State. He has

been associated with the corporation since 1939.

Howard J. Waff, Jr. has been appointed exclusive representative for Connor Engineering Corp. Kno-Draft residential ceiling air diffusers in North and South Carolina and Georgia.

William T. "Bill" Miles has been appointed a Canadian factory representative for La Crosse Cooler Co. Miles will cover the



No need to get quite this chummy, but—the fellow who handles Flexon Vibra-Sorbers is a good man to know. He'll show you how Vibra-Sorbers isolate compressor noise and vibration in refrigeration and air conditioning installations . . . how they minimize the danger of costly call-backs that eat away your profits.

The all metal construction resists corrosion and fatigue and remains gas-tight even when subjected to prolonged vibration. Vibra-Sorbers in sizes 3/16" through 1 1/2" are U.L. listed for both high and low side use. Larger diameters also available. Bulletin 139 gives further details. Write today!

backed by over 54 years

1321 S. THIRD AVENUE, MAYWOOD, ILLINOIS

FORMERLY CHICAGO METAL HOSE CORPORATION

Manufacturers of flexible metal have and conduit, expansion joints, metallic bellows and assemblies of these components In Canada: Flexenics Corporation of Canada, Ltd., Brampton, Ontario

Circle No. 34 on Reader Service Card



A new 560 lb. daily capacity ice flaker that is fast becoming the number one salesmaker in restaurants, bars, hatels, sada fountains, graceries and all retail outlets that want and use ice making equipment. Here is the newest, the most scientifically designed unit on the market taday. Easy to operate and trouble free, CHIP-FREEZE is priced below competition. Offer your customers the unit that is making sales history. Sell CHIP-FREEZE, the only ice flaker in its field that provides these outstanding sales features.

e FOR ECONOMY..., Savings up to 93%. A fall bushel of crystal clear ice flakes for as little as 2c or 6c per hundred lbs. (depending on local power and water rates). Pay only for the ice that you need. Low installation cost and easy maintenance makes CMIP-PREEZE the most economical unit on the markel.

Send for complete information and prices



Sparkling pure ice is always at your WAIST LEVEL! • FOR CONVENIENCE . . . New NO DEEP REACHING DESIGN places ice at waist level . . . Vight at your fingertips for instant serving. Easy to operate, this space saving unit automatically turns itself on and off and is ideal for any water system.

- FOR SANITATION . . . No possibility of accumulation of ice that leads to scum, dirt and decay. CHIP-FREEZE produces ice at the top of the unit and enables you to constantly draw clean fresh ice from the lower part of the upper section of the sanitary, stainless steel storage bin. Newly produced ice then falls into place . . . ready for serving.
- FOR BEAUTY . . . Beauty pays off in sales appeal. The attractive CHIP-PREEZE space saving cabinet is available in a wide choice of decorator colors to harmonize with any interior. Easy to clean hi-bake enamed finish retains its luster for the life of the machine.

l i	City	Zone State
į	Address	Phone
	Firm	
	Nome	
	I am interested in knowing more about	it CHIP-FREEZE Automatic Ice Flaker.
į	Gentlemen:	CRAC
r		

Circle No. 35 on Reader Service Card

Province of British Columbia, from headquarters at 1931 Second Ave., Seattle.

Paul A. Ryan, has been appointed advertising and sales pro-



motion manager, for Janitrol Heating & Air Conditioning Div., Surface Combustion Corp. Active in the merchandising field for 17 years, Ryan

comes to Janitrol from Ft. Wayne, Ind., where he was sales planning manager for Capehart Div., International Telephone And Telegraph Corp. He is a former vice president of Product Presentations, Inc., Cincinnati, and from 1943 to 1953 held several management positions in the advertising and public relations departments of Crosley, a division of the AVCO Mfg. Corp.

B. J. Wuerthner has been appointed to the sales staff of the midwest district, for Wolverine Tube Div. of Calumet & Hecla, Inc. Wuerthner will work out of district headquarters in Evanston, Ill.

Two vice presidents, a secretary, and a treasurer have been appoint-



M. H. Potnesude

ed in the Sweden Freezer Mfg. Co., which recently opened an assembly plant in Columbus, Ohio, and has made additions to the home office. M. H. Pat-

neaude, domestic sales manager, has been named vice president in charge of sales, with another vice presidency going to Ludvig J. Aspen, Seattle plant manager, who takes over the direction of all manufacturing.

Charles L. Burton, export manager and sales manager of Sweden Freezer of Canada, Ltd., advances to secretary of the company and Carl E. Swenson, comptroller, becomes treasurer. Patneaude has been in the company's sales department for five years, the last three as domestic sales manager.

S. J. (Wes) Seibert has joined Amana Refrigeration, Inc., on a special assignment with the firm's executive sales staff. Engaged in refrigeration sales management since 1929, Seibert held such various positions as export manager, national service manager and Canadian sales manager, before coming to Amana.

John F. Surbeck has been appointed Washington, D. C. regional manager for air conditioning and heating with Gibson Co. Surbeck joins Gibson after being engaged in self-contained air conditioner sales in the Washington and Philadelphia area for several years. He will cover parts of the states of Delaware, Maryland, Virginia, and North and South Carolina.

Bob Savre has been named district sales manager for O. A. Sutton Corp., Inc., in the Indianapolis territory. He will be responsible for sales and merchandising of air conditioners and air circulators in Indianapolis, Cincinnati, Columbus, Dayton, Evansville, Ft. Wayne, Louisville and South Bend.

Donald E. Jackle has been assigned to the Philadelphia sales office of Trane Co. Jackle, a graduate of the 1953 Trane engineering sales training program, recently completed military service.

L. S. Machling has been appointed sales manager of heating and cooling products by the Richmond Plumbing Fixtures Div., Rheem Mfg. Co. Maehling, who joined the Richmond organization in 1948 as district sales manager of the Pittsburgh territory, will headquarter at Richmond's general offices at Metuchen, N. J.

Robert C. Hodapp has been promoted to the position of sales



manager of the Betz Div. of Bohn Aluminum & Brass Corp. Hodapp formerly was sales engineer of the Division. A graduate of Purdue University.

Hodapp has broad experience in air conditioning and refrigeration, having been identified with the industry for the past 13 years.

Robert K. Eskew, has been named chief engineer for "all-year" gas air conditioning of Servel, Inc. Eskew with Servel 23 years, moves up from product director for "all-year" air conditioning, a position he assumed last October. The assignment of product director has been taken over by G. O. Kuhen, former assistant product director. Kuhen started with the company in 1930 as an engineer.

Ansul Chemical Co., has appointed Edward A. Beacham as



senior engineer in the New Products Div., refrigeration sales development. Beacham comes to Ansul from the materials and processes

department of Carrier Corp., where he was a senior engineer. Previously, he had been a supervisor in the chemical engineering group of the works laboratory of General Electric Co. Now, greater dependability and flexibility in all your beating-cooling applications—at a new low in cost!

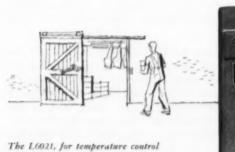
# New Honeywell line of temperature controllers



The L6018, for temperature control in air conditioning units—For window air conditioners, store units, all general air conditioning applications. Available with extended shaft and knob with or without case.

Your choice of Model L6018A Unit Thermostat with single pole, double throw action; L6018B Changeover Thermostat with double pole, double throw action; L6018C Changeover Thermostat with single pole, double throw action.





The L6021, for temperature control in refrigeration—liquid, surface or air—For frozen food cases, beverage dispensers, ice cream cabinets, soda fountains, ice-making units, meat and vegetable display cases, and for general refrigeration applications.

HERE's a new kind of economical and reliable temperature control for air, surface and liquids—the L6018 and the L6021 remote bulb temperature controllers. Honeywell developed them to give you low-cost dependability. And their built-in versatility means you can satisfy a wide range of uses—and simplify inventories, too.

Never before has a low-cost temperature controller given you so many plus features

- · Fast-acting response
- · Trouble-free enclosed MICRO SWITCH
- · Close temperature control
- Sturdy, compact design
- Smaller remote bulb
- · Easy to install

For complete information on the L6018, L6021, or any of our complete line of heating-cooling controls, call your local Honeywell office. Or write Honeywell, Dept. CR-9-171, Minneapolis 8, Minnesota.

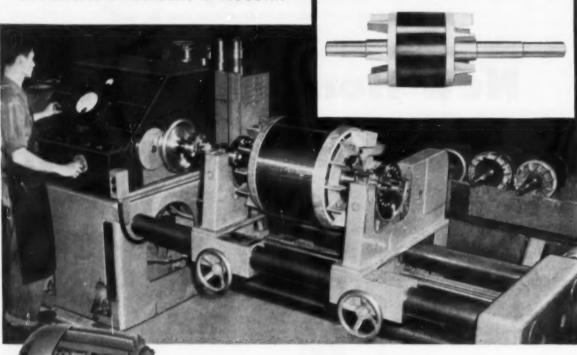
# Honeywell



First in Controls

112 offices acress the nation

WAGNER ELECTRIC MOTORS...
THE CHOICE OF LEADERS IN INDUSTRY



Wagner totally-enclosed fan-cooled motor.

1 through 30 hp, NEMA Frames 182-326U.



Wagner open type drip-proof motor. I through 30 hp, NEMA Frames 182-326U.

# All Wagner Motors are OYNAMICALLY BALANCED for smooth performance

Motor balance is important to fine machine and equipment performance. A well-balanced motor greatly reduces vibration—allows your equipment to operate smoothly and quietly.

Every rotor, even in the smallest fractional hp rating, used in a Wagner Motor is dynamically balanced on balancing machines like that shown above.

Your selection of Wagner Motors for your applications gives you other benefits, too. You can specify totally-enclosed motors that are fully protected against damage from filings, chips, dirt, fumes, moisture; or open type drip-proof motors—in ratings through 500 hp. Wagner Motors are known for dependable performance...they assure freedom from costly motor maintenance and even more costly motor failure. And—you have motors that can get on-the-spot service when needed—anywhere in the United States.

M56-9A



Wagner Electric Corporation

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

ELECTRIC MOTORS . TRANSFORMERS . INDUSTRIAL BRAKES . AUTOMOTIVE BRAKE SYSTEMS-AIR AND HYDRAULIC Circle No. 37 on Reader Service Card

# Modern cure for defrost blues!

Paragon

# 5100 series

# makes commercial defrost systems 100% automatic

PARAGON engineering scores again! Helps you modernize customers' refrigerating systems with a low-cost, simple changeover that cures haphazard defrosting for all time!

New 5100's time control initiates the defrost cycle, and a small built-in solenoid (when energized by a remote thermostat or pressure switch) terminates the cycle. There's more-an adjustable mechanical fail-safe overrides the solenoid so defrost cycle can be terminated at 45-minute multiples-regardless of solenoid action.

YOU PROFIT by eliminating a minimum of two service calls per year. With the 5100 on the job, seasonal temperature adjustments common to most systems are totally eliminated.

YOUR CUSTOMERS PROFIT because new 5100 fail-safe feature eliminates danger of food spoilage. Equipment cannot remain on "off" cycle after normal defrost period is over.

# A snap to install!

Installation diagrams and complete operating data furnished in each carton. Unit has 24-hr. dial; 1 to 8 defrosts per day. New 5100 is powered by a long-life Telechron 4-watt heavy-duty motor-a quality product throughout.



5100 series special design takes advantage of existing thermostat in electric heat systems

Easy hook-up eliminates buying extra thermostat. Simplifies your installation, saves customer's extra expenditure.

> Order the new 5100 series from your distributor -or write: Dept. 1688



PARAGO











Two Rivers, Wisconsin

WORLD'S FOREMOST MANUFACTURER OF TOP-QUALITY TIME CONTROLS

Circle No. 38 on Reader Service Card

# "A DOLLAR TURNED-IS A DOLLAR EARNE

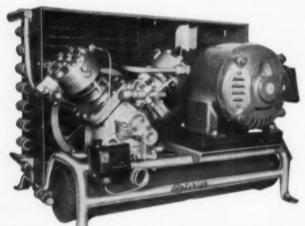
—and this is how Lehigh interchangeability helps you turn your dollars quickly



For an investment of less than \$50. Lehigh jobbers can carry in stock sufficient interchangeable parts to meet the average service requirements of the complete Lehigh line of open type units ¼ H.P. thru 5 H.P. Lehigh engineering thus gives you triple protection - top quality, modern design, minimum parts problem and investment.

# Have You Seen Lekigh's New Air-Frame Tubular Base?

Tired of being a weight-lifter? Then ask your Lehigh jobber to show you the new Lehigh units with this back-saver base. It not only chops off many pounds of useless dead weight but has many other advantages. It gives complete accessibility to all compressor and motor parts. It gives faster and greater sub-cooling by increasing the air-flow over the receiver. It makes inspection and cleaning easier. It adds rigidity and strength to the unit - and it is less costly to ship. Now on all heavy-duty models 1/2 H.P. thru 3 H.P., air and water cooled.



"America's Most Modern Condensing Units" PACKAGED, STANDARD & HEAVY DUTY

> Road Proven REFRIGERATED TRUCK SYSTEMS

Compressors for AUTOMOTIVE AIR CONDITIONING

DIVISION OF LEHIGH, INC.

Plant: LANCASTER, PENNA.

Export Department, 13 E. 40th Street, New York City

Circle No. 39 on Reader Service Card

# **HOW TO SPEND** ON EVERY SERVICE CALL

eliminate costly guesswork and call-backs with

the pocket-size snap-around volt-amp tester

FREE! You'll want to read the helpful booklet that tells and shows you 14 WAYS TO BOOST YOUR SERVICE PROFITS with a snap-around volt-ammeter. It's packed with practical knowhow that can mean more money in your pocket. You'll see how the AMPROBE helps you handle

more jobs each day - make more profit on each job. Eliminate guesswork with an AMPROBE the pocket tester that measures both voltage and current without shutting down equipment. Send for your copy of 14 ways to BOOST YOUR SERVICE PROFITS by mailing the coupon below. Do it today.









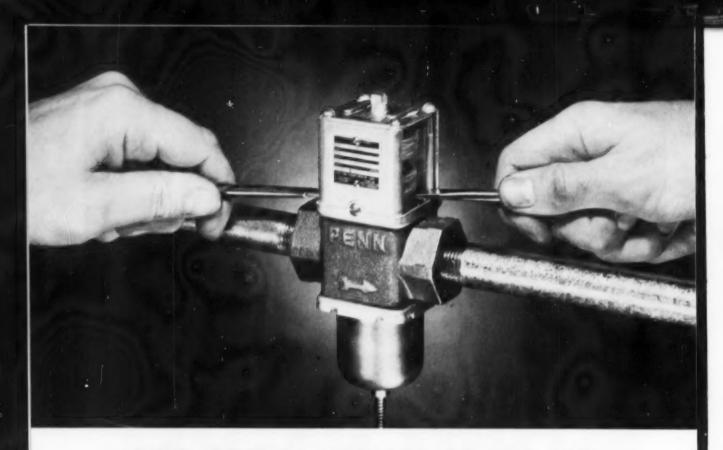
mail coupon for FREE SERVIC BULLET

SERVICE	ALC:
BULLETIN	14 ways a volt-assessed cost BOOST
Pyramid Instrument Corp.,	YOUR SERVICE PROFI
Dept. A-96, 630 Merrick Road, Lynbrook, N. Y.	PYDAMIO MOTSUMENT CONFOR
Please send me a FREE copy of 14 Ways to Boost Your Service Profit	NAME AND ADDRESS OF THE PARTY O

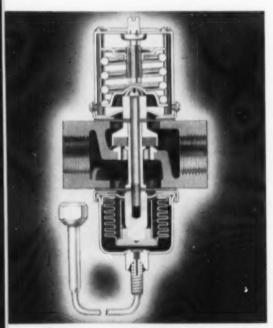
Please send me a 14 Ways to Boost

NAME	
COMPANY	

Circle No. 40 on Reader Service Card



# SEE HOW EASY IT IS TO FLUSH PENN WATER VALVES



Cutaway view shows how 2 nylon-reinforced synthetic diaphragms in Penn water valves keep water away from the bellows, range spring and sliding parts. Penn puts an end to rust, corrosion and sedimentation, the deadly enemies of ordinary water valves.

# 2 screw drivers, a flip of the wrists-and PENN is ready for long, trouble-free service

Only Penn water valves offer such easy manual flushing! And, you know how important it is to flush out any newly-installed water valve. With Penn, all you do is insert two screw driver blades under the range spring and lift up. All the pipe cuttings, solder balls, rocks and other foreign material that normally get into the water lines during installation are washed away. Easy-to-flush, Penn eliminates those costly service call-backs due to improper valve seating.

That's just part of the story. Penn water valves are highly sensitive to changes in refrigerant head pressures, assuring top efficiency. There's no valve chatter, no water hammer, no rusting of range spring, no corrosion of sliding parts. Sizes from \%" to 2\1/2" in flanged or threaded styles—and also available for temperature actuated service. Ask your wholesaler.

# PENN CONTROLS, INC. Goshen, Indiana

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, GAS APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

# TRENDS · OPINIONS · REPORTS.

A COOL \$3 BILLION, or more, is the expected sales figure which the 70-odd manufacturers of air conditioners will hit when they add up their sales figures for 1956, according to Newsweek magazine. This expected figure represents three times the size of business five years ago. The weekly news magazine singles out the "heat pump" as the ultimate combination conditioning system and says experts predict a million heat pumps will be in use by 1965 as compared to a few thousand today. Slashing of high prices which have been the industry's chief stumbling block has resulted from soaring volume and competition, the magazine states, and operating costs also have been substantially lowered.

A MOBILE BUTCHER SHOP to serve his customers in outlying districts is the enterprising device of Tom Dingle, proprietor of the North West London Meat Co., Bath. The "shop" is fitted with a refrigerated compartment of approximately 65 cu.ft. capacity, the doors of which can be seen through the window. Design and installation was carried out by Avon Refrigeration Co. Ltd., Devizes, Wilts., in co-operation with Dingle. Refrigeration is by means of a 1/4-hp condensing unit coupled to hold-over plates mounted on rear wall of cold room. Condensing unit is housed in small compartment at rear of vehicle and is operated by a gasoline engine. Special clutch is fitted to enable unit to be run direct off mains when garaged at night.

VERY LITTLE RELATIONSHIP exists between overall utility costs and the cost of air conditioning, R. A. Gonzalez of Airtemp reported at a recent round-table conference at the National Housing Center, Washington, D. C., devoted to air conditioning problems. Tests conducted in Haddonfield, N. J., Dallas, and Tulsa, Gonzalez said, demonstrated not only that \$100 a year is a fair allowance for operation and maintenance of central air conditioning, but also that power costs and air conditioning costs are not necessarily related. In other words, Gonzalez said, a family which was a heavy user of current for air conditioning might in other respects use only a moderate amount. Tests showed the varying costs seemed to result primarily from individual habits.

A "HOT" MONEY CASE which bothered the Republic of Turkey for years has been solved . . . not by detectives, but by air conditioning engineers. For years, it seems, the Turkey mints have been able to print official bank notes only when the temperature was 72 degrees and the relative humidity hovered in the 55% range. Now, with the installation of air conditioning in the new Turkiye Cumhuriyet Merkez Bankasi Banknot Matbaasi Binasi (Republic of Turkey Central Bank Notes Press Building) in Ankara, the presses can roll whenever officials give the nod. No longer will the money stick to press rollers, literally get hot or scorch, pull off in uneven sizes or "out-of-register" impressions, causing fuzzy reproduction of pictures and words. The system, installed by Trane, uses a 100-ton centrifugal unit.

THE RAPID INCREASE in sales of prepackaged frozen meat underscores the importance of expanded facilities and improved methods of handling these products. Production of prepackaged frozen meat in 1955 was less than 2% of the 16 billion pounds of fresh red meat marketed during that year. But some industry groups estimate that more than 20% of that market will be frozen by 1960. To market in frozen form 20% of the current fresh meat volume, the trade would need facilities capable of handling about 3.3 billion pounds of dressed carcass weight. Specialists in the Marketing Research Div. of Agricultural Marketing Service say that this amount is equivalent to 76% of the commercial pack of all frozen foods in 1955.



**BEFORE ENTERING** this enrober, which flows chocolate over the fillings, candies are chilled on a 12' refrigerated belt after leaving the unit which coats the bottoms.





# BLAST COOLING

### Mr. Contractor:

Do you list a candy manufacturer among your customers or prospects? If you do, this article can be important to you. It describes the application of a specialized refrigeration technique which you might adapt in order to improve production for the manufacturer and increase business and profits for yourself.

A novel application of blast refrigeration has solved some serious problems in the production of deluxe chocolates in Baur's candy manufacturing plant at Denver, Colo.

Baur's, which has been manufacturing top-quality candies since 1872, has been forced, in recent years, to step up its production to more than 1,000 pounds per day in order to keep pace with the demand for its deluxe confections.

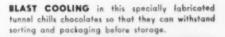
With the bulk of Baur's daily output in the form of gift-boxed fine chocolates, it has been necessary to develop year-round chocolate production methods, eliminating the usual cut-back in cholocate-covered candy output during the summer months, when periods of high humidity and warm temperatures can produce disastrous results in processes where rich, low-meltingpoint milk chocolate is used.

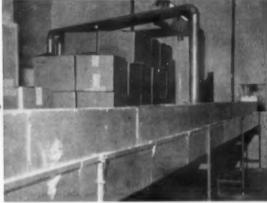
Like most progressive candy manufacturing plants, Baur's already was using refrigerated enrobers for the application of chocolate to the cream, nut, fudge, and other fillers. These enrobers are mounted at the front end of two 120' conveyor belts which extend across the full width of the third-floor candy plant to form a continuous production line.

Under normal practice in most candy manufacturing plants the refrigerated enrobers in themselves provide HAND DECORATING is done as coated chocolates pass on the production line from enrober to long aluminum chilling tunnel.











# aids production flow in candy making

enough low-temperature protection for the candies inasmuch as they are transferred to low-temperature storage rooms immediately after the chocolate is applied and chilled.

At Baur's, however, a special problem exists in the fact that most of the firm's packaged chocolates are "assortments" which require that each run of various types of chocolates be kept available for sorting into boxes in the final assembly room at the end of the conveyor. Consequently, refrigeration is applied at not one but three points along the elaborate conveyor line.

The first application is a refrigerated belt, some 12' in length, located at the head of the line between a machine which applies a coating of chocolate to the bottom of the filling and the enrober, contained in a stainless steel housing, which flows chocolate continuously over the tops and sides of the fillings passing below.

This belt, on which the chocolates move at the rate of approximately 20' per minute, is refrigerated to approximately 35 F by means of a cooling coil enclosed in an aluminum housing directly below the canvas webbing.

either side of the belt, apply the "twirl finish" to the For the next five feet after the enrober, the belt is non-refrigerated. This provides a short space of time during which two expert decorators, one seated on either side of the belt, apply the "twirl finish" to the top of the chocolates, or any other decorative touches such as sugar crystals or icings of contrasting color. All of this work is done by hand.

It is during the next 60° of conveyor travel that the critical point in Baur's chocolate production is reached. In traveling this distance, after enrobing and hand decoration, the chocolates must become cold enough to withstand several hours of open storage in the assembly room, plus the added heat of individual handling during the sorting and packaging operation.

The complete solution to this problem has been developed in the form of a blast chiller designed by Baur's and built by a Denver refrigeration contractor. This consists of an aluminum tunnel, measuring approximately 10 x 8 inches, which covers the slowly-moving conveyor belt all the way from the decorating point through two walls and into the final assembly room.

Refrigeration in the tunnel is provided by a swift-moving blast of air, cooled to 38 F by a 2-hp com-

Concluded on following page ▶ ▶ ▶

AT THE END of the refrigerated line, girls pack the chocolates into polished steel stock boxes, one variety to each box, to prepare them for final packaging.





FINAL STEP in the operation is packaging the different varieties into gift assortments in a specially air conditioned room. Boxes are then moved to storage area.



### BLAST COOLING AIDS PRODUCTION FLOW IN CANDY MAKING

pressor located in a small room at the rear of the filler-preparation department. This compressor supplies refrigerant to two banks of coils mounted in a galvanized sheet metal air handling chamber in one corner of the same room.

Two flexible ducts lead to the tunnel one for supply air and the other for return. Approximately 3500 cfm of air chilled to 38 F is moved through the tunnel, with this air being 100% recirculated. Filters installed at entrances of both the supply and return ducts eliminate dust and foreign matter.

Temperature drop from one end of the tunnel way to the other is less than 2 degrees. Since the chocolates enter and leave the tunnel through a narrow slot at either end, and the supply and return air ducts are well balanced, there is very little air leakage at the openings.

The result is that each chocolate, by the time it arrives in the assembly room, is chilled to the proper hardness and can be safely plucked off the belt and deposited in polished steel stock boxes without danger of pressing, handling marks, or other damages.

The 20' x 15' assembly room, in which all gift chocolate packaging is carried out, is separately air conditioned, with temperature being maintained between 55 and 60 F. All chocolates as produced are simply transferred to the steel stock boxes, which in turn are transferred to two unique "trolley" packaging tables, one at either side of the room.

These tables measure 16' long and 5' high, with their tops inclined at a 45-degree angle for convenient box filling. One table provides space for filling 96 one pound cartons, the other 102 one pound cartons.

The refrigerated chocolates are placed on novel "trolley racks" which are white-enameled wooden cabinet fixtures which roll back and forth on rails mounted along the lower edge of the packaging tables. Two such trolleys permits two girls to work at once, if necessary, placing one chocolate of a specific variety in each box before switching over to another chocolate of still another variety, and repeating the process until the complete assortment has been packaged according to plan.

Final step in this candy production line is the use of an electric drill press, equipped with a soft brush, to "polish" each box of chocolates before it moves to refrigerated storage rooms. Whirling at a high rate of speed, with the bristle tips of the brushes barely touching the chocolates, this unique application puts a high gloss on the chocolates which adds substantially to their sales appeal.

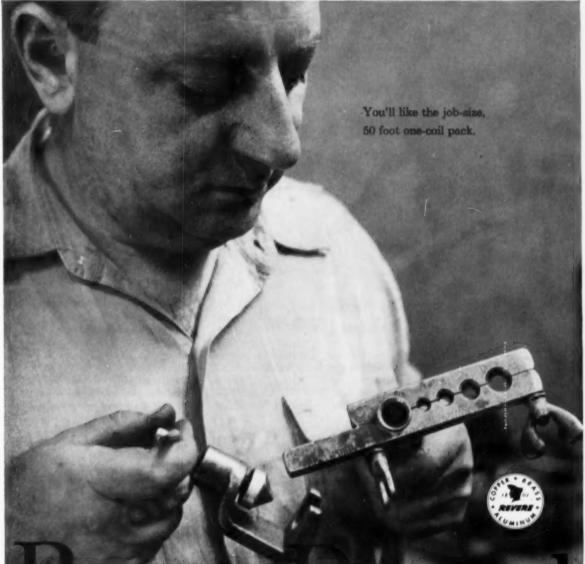
Net result of this unusual application of blast refrigeration has been almost complete elimination of the costly rejections which formerly stemmed from melting and streaming of the chocolate during its exposure to warm temperatures during the finishing and packaging processes.

A blast chilling tunnel solves this candy plant's production problem by hardening

the chocolates sufficiently so that they can be sorted and packaged without damage.

# Split-free flare

Because DRYSEAL tube is dead-soft. flares are perfect every time. DRYSEAL bends finger-easy, too. Stays bone-dry, whistle-clean, mirror-smooth. The crimp is double . . . and tube-size to slip easily through fittings. Sizes 1/8" to 3/4". Use DRYSEAL on your next job.

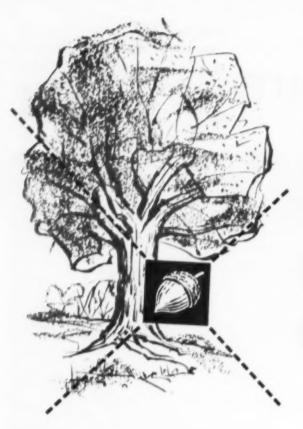


Revere Drysea

COPPER REFRIGERATION TUBE

You'll find a Revere Distributor close at hand.

REVERE COPPER AND BRASS INCORPORATED, founded in 1801 by Paul Revere



Do your very best on each industrial cooling job, this Chicago contractor has learned, and you'll find that . . .

# You GROW as Your Customers GROW

WHENEVER you sell a piece of cooling equipment to an industrial concern, or service a cooling system for such an organization, don't make the mistake of considering it as a "one shot" proposition.

Industrial firms have a way of growing, and as they grow their requirements for all types of equipment and services increase. The cooling contractor who recognizes this fact, and gears his operations accordingly, can take a long step toward success through sharing in this industrial expansion simply by growing with his customers.

That's the way it has been with Chicago Conditionaire Co., refrigeration and air conditioning contractor, and George Barr Co., a firm which specializes in the packaging of various products in spray cans employing aerosol propellants.

First contact between these two firms came 7 or 8 years ago when the Barr organization moved its plant to a new building, and Chicago Conditionaire was called in to move and set up the company's refrigeration installation. The favorable impression created by the contracting firm on this initial job has resulted in a continuing stream of business, including the sale of new equipment as well as servicing of the existing installation, as the Barr company has steadily expanded its operations in the aerosol packaging field.

### Little Job "Snowballs"

Thus, what started out as one small job has developed into a steady source of business for Chicago Conditionaire that over the years has proved to be one important link in the contracting firm's own chain of growth and development.

The original installation at the Barr plant centered around a 30-ton ammonit system operating with three flooded chillers. One of these chillers is used to cool the Freon propellant, while the other two cool the various types of concentrates being packaged. Temperatures that must be held by these chillers vary

with the product being packaged and the type of Freon compound being used as the propellant.

If, for instance, straight F-12 is used, it must be held below -21 F. A mixture of F-12 with F-11, on the other hand, may be held at temperatures ranging from -10 F to 5 F. The type of refrigerant mixture used depends upon the design of the dispensing valve on the can and the type of spray desired. Some concentrates, for example, are handled better through larger orifices. All of these factors affect the pressure required to operate the spray valve most efficiently.

Most concentrates being packaged are held at about -10 F in the chillers. Temperature control is very important, as some of these concentrates precipitate or crystallize badly if the temperature of the solution is allowed to go below zero or -5 F.

Also included in the original installation was a 175-gal. batch cooler powered by a 1-hp direct expansion system. This is used for holding concentrates that have a tendency to precipitate in the chillers, forming a deposit on the walls of the chillers and decreasing their efficiency.

The concentrates are not as likely to precipitate in the batch cooler due to the slower rate of cooling. The instantaneous chillers reduce concentrate temperature from room temperature to -10 F in a matter of minutes, while it takes approximately 4 hours to chill the 175 gallons of concentrate to this same temperature in the batch cooler. Even if some deposits should form on the surface of the batch cooler, this unit is much more readily cleaned than are the chillers.

### Filling Bowls Chilled

In the actual packaging line, the cans pass under the filler mechanism through which the concentrate and propellant flow from refrigerated filling bowls mounted above. These bowls have a capacity of 4 or 5 gal. each. Originally they were cooled by a ½-hp direct expansion system, which now has been increased to 1 hp in capacity. The filling bowls are held at the same temperatures as the chillers, with the coils being designed for just enough capacity to offset the heat loss of the bowls.

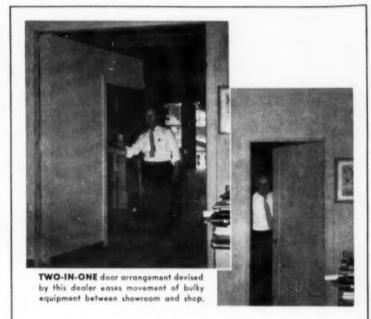
As each can passes under the concentrate filler it is filled to the proper level by means of an automatic timing device. Then it passes under the aerosol filler where three separate shots of Freon are added. The propellant is added in this way to prevent the solution from boiling over as the Freon hits the concentrate. After the Freon has been added, the cans are capped.

### Stand-by Unit Needed

Following the move to the new plant, the Barr management decided that they should have a stand-by ammonia compressor in case of failure of the original equipment, so Chicago Conditionaire was called upon to supply this reserve system.

Subsequently the Barr firm obtained a contract for aerosol pack-

Continued on page 100



# Door - in - a - Door

BY making a novel adaptation of the "Dutch door" principle, United Refrigerator Sales Co., St. Louis Tyler commercial refrigerator dealership, has been able to give its showroom an "intimate" look, and still have plenty of door space to move large commercial cases in and out of the area without difficulty.

The company is proud of its 50 x 60-foot showroom, decorated with a tile floor and light blue and dusty rose pastel walls, and attractively stocked with representative case and cooler models, filled with dummy products. But before the door-in-a-door idea was developed, the 8-foot doorway in the center of the back wall, necessary to move big equipment items in and out, was not an appearance asset to the showroom.

All too often, the big doors were left open, and visitors were distracted by looking through into the area housing the shop and storage sections. The company decided to do something about it . . . and thus the "Dutch door" idea was born.

First, a heavy door, the width and height of the original doorway, was constructed, but designed to come flush with the rear wall and to fit so snugly at the top and side that, at a distance, it can scarcely be noticed. Then an opening the size of an ordinary office door was cut out of the right side of the larger door, with an "overhang" above which is part of the main door. A standard size door was inserted in this opening and hinged onto the right side of the archway between the two sections of the building, and a jamb for the smaller door was built on the lip of the broad main door.

The casual visitor to the United Refrigerator Sales Co. showroom notices only the small door, which is used for all normal traffic between showroom and shop. He doesn't know the larger door exists. But when it is necessary to move big equipment in or out of the showroom, it's a simple matter to swing back the main door, pull back the small door... and have plenty of room to truck even the largest units through with ease.

\$7,000 A YEAR savings in water costs is the "bonus" Michigan Molded Plastic expects from the two cooling towers it recently put to work. Here's one of the two.

# SELL THE SAVINGS STORY



in merchandising
cooling towers
to industry

JUST to look at, a cooling tower isn't very dramatic. But appearances can be deceptive . . . and if you're one of those persons who looks beneath the surface, this prosaic-appearing item can tell a story of savings that's as spectacular as almost any piece of equipment you can think of.

Here are three separate instances that prove the point.

At Michigan Molded Plastic, Inc., Dexter, Mich., the use of two cooling towers to cool water used to draw heat away from molding machines making plastic parts will save an estimated \$7,000 annually.

At Firth-Loach Metals Co., a manufacturer of cemented carbide tools located near Pittsburgh, installation of cooling tower equipment effected savings so startling that three checkers were sent out by the local water company to check its own water meter readers.

At the Frankenmuth Brewing Co. in Frankenmuth, Mich., the use of three cooling towers, besides saving more than \$2,000 a year in water costs, has also eliminated need for an expensive addition to the brewery's water system, which has nearly reached the limit of its present capacity.

Michigan Molded Plastic was using water at a rate of 60 million gallons annually. A large percentage of this water was being used merely as a coolant, to draw heat away from molding machines. Despite its cost, this water was not an ingredient of the company's products—it was unaffected, chemically, during the processing.

However, heat generated by the molding machines raised cooling water temperature so much that it was impractical to recirculate it directly back to the machines. The problem was to drop water temperature enough to enable it to be used over and over again, instead of being dumped down the drain.

In adding cooling towers, the problem was simplified by the fact that actual refrigeration of the coolant was not necessary. Design operating conditions at the plant were such that water with a temperature of 30 F met all requirements of the cooling operation.

One of the two cooling towers (Acme) selected was adjusted to deliver water at a rate of 126 gpm to 14 injection molding machines: another was set to deliver 165 gpm to 32 compression molding machines.

Management of the plant says the units will pay for themselves in a comparatively few months. Water consumption dropped in one quarterly period from 14,525,400 gallons of city water at a cost of \$2,335,28 to 3,532,960 gallons at a cost of only \$576,48. Savings are expected to be approximately \$7,000 annually, important to any manufacturer.

The Firth-Loach Metals Co. operation (manufacturer of cemented carbide tools) requires sintering in hydrogen or vacuum furnaces at 2700 F. For these furnaces and for a variety of other applications, such as cooling of high frequency induction coils, vacuum pumps, the aftercooler on an air compressor an X-ray machine transformer, a high frequency converter, a large amount of water had been required. It was decided that a cooling tower could be a vital link in recirculating and cooling the water and preventing its waste to the sewer.

The Firth-Loach water bill is now 1/10 of what it was before the cooling tower (Halstead &



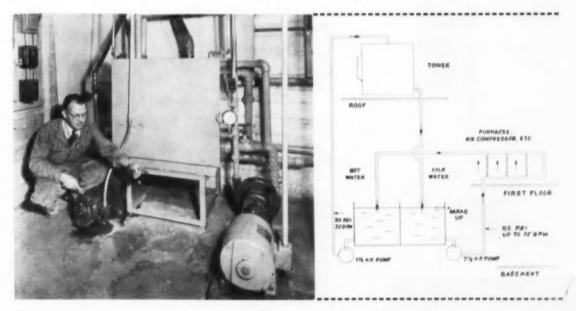
ONE-THIRD LESS water is used by the Frankenmuth Brewery since the three cooling towers shown here were installed. The equipment also eliminated the need for an addition to the brewery's water system.

Mitchell) was installed. Since the company is now using 50% more water, the cost is really 1/15 of what it otherwise would have been. These are the results that startled the water company into checking the accuracy of its own meter readers.

The system at Firth-Loach involves a central sump into which cooling water from all operations is passed. From this sump the water is pumped to the cooling tower, and then circulated into the other half of the sump before being distributed back into the operations. The system maintains 85 psi at 27 gpm, and is capable of later expansion to 75 gpm.

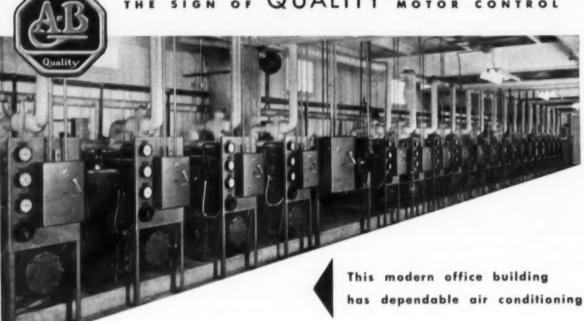
In the Frankenmuth Brewery installation still another problem was encountered. Frankenmuth (city) is on the edge of the "great salt lake" which underlies the area of Midland, Bay City and Saginaw. Anyone who drills a well is likely to get salt water, which means that new sources of fresh water are harder to obtain than Franken-

Continued on page 71



SAVINGS SO HIGH they startled the water company resulted from installation of a cooling tower at Firth-Loach Metals Co. Photo and sketch show the system arrangement. The 1½-hp pump (left) carries hot water from a split central sump to the cooling tower; a 7½-hp pump (right) circulates cooled water to furnaces, air compressor, etc.





TYPICAL ALLEN-BRADLEY

CONTROL UNITS FOR

AIR CONDITIONING & REFRIGERATION

Sullatin 712 Combination Garter

with new visible contact disconnect awitch.



Temperature Control Ponel





... all compressors are equipped with

# ALLEN-BRADLEY

TROUBLE

The importance of "trouble free" operation is well recognized by airconditioning and refrigeration equipment manufacturers. This is illustrated in the above picture which shows 20 of 41 air-conditioning compressors installed in a new office building . . . all equipped with Allen-Bradley controls.

The basic simplicity of Allen-Bradley solenoid starters is the reason for their outstanding reliability . . . there is only ONE moving part. No bearings or gimmicks to corrode and stick . . . no jumpers to break. The double break, cadmium silver alloy contacts never need cleaning, filing, or dressing . . . maintenance down time is eliminated, and so are "service calls." Dependable overload relays that maintain their accuracy indefinitely protect motors against burnout.

Specify Allen-Bradley "Quality" motor control . . . you will never have reason to regret your decision. Please write for your copy of the latest Allen-Bradley Handy Catalog, the 132-page guide to trouble free a-c and d-c motor control.

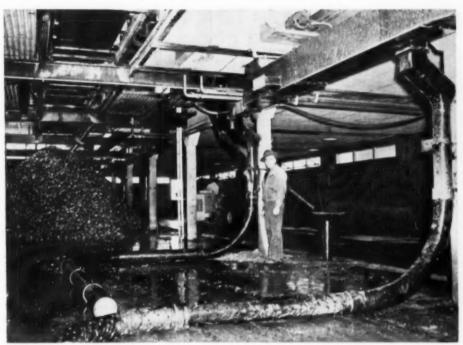
Allen-Bradley Co.

1340 S. Second St., Milwaukee 4, Wis.

In Canada-

Allen-Bradley Canada Ltd., Galt, Ont.

Circle No. 43 on Reader Service Card SEPTEMBER, 1956 . COMMERCIAL REFRIGERATION



PILED IN HIGH MOUNDS atop these sections of perforated pipe, each day's catch of cysters is kept cool until processing by chilled air forced upward through the piles from the perforations.

# **Cooling Through Perforated Pipes**

preserves fresh-caught oysters until they are shucked

A highly unusual cooling application—believed to be the first of its kind anywhere—keeps freshly caught oysters at the J. H. Miles & Co. plant in Norfolk, Va., properly preserved until they can be shucked and readied for market.

Previously, each day's catch of oysters was stored on ice overnight, still in their shells, until they could be shucked and packed the following day. This old fashioned cooling method has now been replaced by a mechanically refrigerated means of preservation.

As they are unloaded from the oyster boats, the bivalves are piled over an arrangement of perforated pipes lying on the surface of the storage room floor. Cold air is forced through these pipes and permeates the piles of oysters, keeping them cool and fresh until the next day's processing. Additional cold air is delivered into the storage room through grilles inserted into the ceiling-suspended ducts leading to the perforated pipes.

Refrigeration for this novel installation is supplied by a 75-ton chilled water system which also is used to cool the vats and the cleaning water used during the actual processing of the oysters. Capacity requirement for the processing area approximates only 30 tons, and for the most part cooling for this area is required only at night and over weekends when the actual processing of the oysters is not in progress, so the one cooling system can satisfactorily serve both purposes.

Two specially designed ceiling-type air handling units deliver the cooled air into the storage area. Each unit has an air volume of 4000 cfm at 4" external static pressure. The units are arranged with stainless steel shaft and hot dipped galvanized casing, with 1" of waterproof insulation.

The Marlo equipment involved in this storage room cooling system was installed by Baker & Co., Norfolk cooling contractor.

# COMMERCIAL REFRIGERATOR

# Food Markets Use Mobile Refrigerated Cases To Boost Sales of Special Items 300 to 500%



EXCEPTIONAL increases in the sales of "special" items when they are refrigerated and displayed in island-type visual merchandisers have been reported by a number of food market organizations in a survey recently conducted by Punxsutawney Co. in an effort to evaluate the acceptance of its new "Beverage-Air" units of this type.

For instance, Quaker Supermarkets, operating in western Pennsylvania, reported that sales of hams increased 475% when they were displayed in this highvisibility type of refrigerated case placed in "spot special" locations. Sales of cantaloupes and watermelons jumped 300% under the same circumstances. Reports on other items showed corresponding or even higher increases.

Management of Quaker Markets have found that the case of moving these units from one department to another has helped stimulate merchandising of "perishables" or "specials" through increased impluse buying. Locations of these display units at check-out counters has resulted in consistently higher sales volume for the featured items.

In another reported instance of sales stimulus through use of these visual merchandisers, Cook's Supermarket in Fresno, Calif., kept a record of a certain brand of soft drinks sold with and without these cases. For three consecutive weeks these beverages were sold in the normal manner. Sales for the first week of the comparative test totaled 8 cases. Nine cases were sold during the second week, and only 6 cases during the third.

For the following three weeks these same beverages were merchandised from refrigerated visual island display units. Sales immediately rocketed to 27 cases for the first week, 37 cases for the second, and 21 cases for the third. This is an average increase of 369% for the three-week period.

### FEDERAL EXPANDING BELLEVILLE PLANT

Contracts have been let to expand the facilities of its Belleville, Wis., plant, more than doubling its capacity, it was announced by John Romadka, President of Federal Refrigerator Mfg. Co. Federal has plants in Waukesha and Belleville.

The planned expansion will make the Belleville plant completely self-sufficient as a manufacturing facility. To date, it has served as an assembly plant with fabricating and painting handled at Waukesha.

### LA CROSSE LINE GETS O. K. FROM NESBITT

The complete line of venders manufactured by La Crosse Cooler Co. has been approved for use by Nesbitt Fruit Products, Inc., of Los Angeles.

### McCALL LAUNCHES FREEZER CAMPAIGN

McCall Refrigerator Corp., has launched a heavily advertised promotion of its line of reach-in and upright freezers to mass feeding establishments across the country. Theme of the campaign tells top management to see the McCall "equipment specialist" in their area.

Recognized McCall dealers will have "Certificates of Approval," attesting that they have received the required factory training for planning and installing equipment for mass feeding establishments.

### YUGOSLAVS TO VIEW WARREN UNITS AT FAIR

Warren commercial refrigerators will be used in the 12,000 sq. ft. typical complete butcher shop at the two-week Trade Fair beginning Sept. 7 in Zagreb, Yugoslavia. This fair is sponsored by the United States Dept. of Commerce, Office of International Trade Fairs is for the purpose of establishing U. S. interest in trade and not aid in that area.

A Warren "Commodore" selfcontained service meat case, an 8ft. sliding-door produce and dairy display case, and a metal-clad walkin cooler will compose the commercial-refrigerator equipment. A Copelametic condensing unit and a Recold coil will be supplied for the walk-in cooler. All of the commercial refrigerator equipment will be in operation.

Fresh meats, produce, and dairy products will be displayed, although some dummy displays are being furnished and also will be used in order to typify American merchandising methods. The exhibit will typify an American butcher shop in actual operation.

### CORPORATION FORMED FOR CARBONIC SALES

The partnership of Jack Chamberlain, Aaron A. Pinson, and Arthur J. Kamp Jr., which operated Carbonic Sales & Service Co., Dallas, Tex., has been dissolved and business now is being conducted by a Texas corporation known as Carbonic Sales & Service Co., Inc. Officers are Chamberlain, president; Pinson, vice president; and Kamp, secretary-treasurer.

### BOOK REVIEW

Title: "How to Double Your Business with Inexpensive Classified Ads."

Publisher: H. K. Simon Co., 48 Fifth Ave., Pelham, N. Y.

Price: \$9.95.

Those little classified ads at the back of your local paper are—or can be—important business stimulators, and properly used they can do a sales promotional job for you that is out of all proportion to their moderate cost. At least that is the contention of the agency that has published this manual.

The manual explains the how, when, where and why of classified advertising for most effective results. It includes actual samples of ads that have been successful, and points out how, in addition to bringing in direct-result business, classified ads can also:

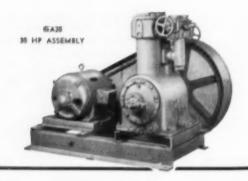
Create interest among prospects who never knew of your existence; keep this interest sustained over a long period; get customers to "work" for you; and "merchandise" your business for maximum profit. The manual is offered on a two weeks' free inspection basis. IDEAL STORE DESIGNS, EQUIPS SUPERMARKET

Ideal Store Fixture Co., Inc. announces the opening of a completely air conditioned Sirv-Way Food Stores supermarket near Ocean Parkway, Brooklyn, N.Y. Owned and managed by Irving Behrman, it was designed, engineered, and completely equipped by Ideal Store Fixture.

The market has a selling area of 5500 sq. ft., and a service area of 750 sq. ft. Designed for customer appeal, convenient shopping, and quick, easy reloading of cases and shelves, this new market is equipped with: 32' frozen food cases, single duty, with canopy, 40' of self service meat cases, single duty, with canopy, 24' of double decker dairy cases, 30' of vegetable cases, double duty, with canopy, 206' of gondola displays, 42' of wall shelving, 6' egg stand, 22' produce window display, 8' x 16' produce island display, 4 checkouts, meat cutting and wrapping room.

BUY FROM YOUR REFRIGERATION WHOLESALER





# another HOWE FIRST!

## HOLDS INSTALLATION COSTS WAY DOWN!

HOWE AMMONIA COMPRESSOR ASSEMBLIES, in capacities to 50 H.P. in both Standard and Booster models, are now factory assembled on steel base with drive and electric motor.

**SAVE Special Foundation** 

SAVE Space

SAVE Installation Labor

SAVE Expensive Belt Guard

The same high quality—medium speed—long life—Howe Compressors are now built into a compact assembly. Makes possible finished installation in a matter of hours after delivery. The experience and know-how gained from 44 years of refrigeration equipment manufacturing backs every Howe recommendation. Your inquiries are invited.

Write for literature

# HOWE ICE MACHINE CO.

Distributors in Principal Cities. Cable Address: HIMCO Chicago

2819C MONTROSE AVE.

CHICAGO 18, ILLINOIS

SINCE 1912, manufacturers of ammonia compressors, condensers, coolers, fin colls, locker freezing units, air conditioning(cooling)equipment.



Circle No. 45 on Reader Service Card

BULLETINS - BOOKLETS - CATALOGS

VARIABLE SPEED "TEXROPE" DRIVES are studied extensively in attractive, 44-page, multi-color booklet available from Allis-Chalmers Mfg. Co. Selection tables are provided for A, B, C, and D section variable speed drives. Also offered are design features, drive principles, hp rating tables for A, B, C, D, and E section belts, and speed range table showing variation in rpm.

Circle No. 103 on Reader Service Card

MEAT CUTTING AND PACKAGING ROOM cooling and heating units are outlined in Drayer-Hanson brochure (C-R. 5632) featuring HRC "Spotaire" series. Construction and performance data, broken down in easy-to-use chart form, covers series. Sales features are highlighted with dimension diagrams and full specifications rounding out publication.

Circle No. 104 on Reader Service Card

RUST PREVENTION is discussed thoroughly in a beautifully illustrated 28-page general catalog (Form 255) issued by Rust-Oleum Corp. Included are 102 color samples of product shades available. Two pages are devoted to Rust-Oleum penetration through rust to bare metal as measured by radioactive tracer techniques and Galvinolsum coatings, formulated to be applied right over galvanized, aluminum, and terne plate surfaces without etching or excessive weathering.

Circle No. 105 on Reader Service Card

TEST EQUIPMENT for servicing refrigeration, air conditioning, and heating equipment is listed and illustrated in a comprehensive bulletin (No. 3001) issued by Simpson Electric Co. Use and operation of each instrument is explained, specifications and features are presented, and prices listed.

Circle No. 106 on Reader Service Card

SUBMERSIBLE PUMP MOTORS are described in 12-page, illustrated booklet released by Franklin Electric Co., Inc. Cutaway photos show design and construction of water-lubricated units with all components in color, including details of hermetically-sealed windings, 6-shoe thrust bearing, expansion diaphragm, filter-check valve, and control box.

Circle No. 107 on Reader Service Card

PRACTICAL INFORMATION on the handling of sheaves as well as dimensions and descriptions are contained in Maurey Mfg. Corp., Catalog MVD-56. Three pages grephically illustrate and describe censtruction, installing, and removing of "Ful-Grip QD" detachable sheaves and bushings. Multi-color, 18-page publication also has standard sheave section with tables and charts giving full data on stock sheave dimensions. Carresponding data is included on bushings required for various sections.

Circle No. 108 on Reader Service Card

TEMPERATURE CONTROLS are featured in a condensed catalog prepared by Partlaw Corp. Quick-reference, B-page publication contains model illustrations and brief descriptions adunits and allied equipment for industrial heating and refrigeration, for applications ranging from -30 to +1200 F.

Circle No. 109 on Reader Service Card

REFRIGERATION CYCLE with economizer is illustrated and explained in attractive, 20-page Catalog No. 19C-100 on herexpansed in arractive, zu-page Cardiag No. 190-100 on ner-metic centrifugal refrigerating machines, available from Carrier Corp. Extensive engineering data includes selection tables, dimensional charts, schematic control diagram, and general specifications.

Circle No. 110 on Reader Service Card

REFRIGERATION COILS are surveyed in Refrigeration Engineering, Inc., Catalog No. IC6a on Recold "Supreme" Ceiling Coil. Explored is refrigeration for applications above 34 F such as fresh meats, flowers, delicatessen, and dairy products. Diagrams illustrate how to use coil for greatest efficiency in rooms of any size and shape.

Circle No. 111 on Reader Service Card

EXPLOSION-PROOF MOTORS are covered in 4-page pamphlet released by Sterling Electric Motors. Literature describes features of motors used in the three most common hazardous locations — gaseous, explosive dust, and explosive grain dust. Cut-away drawing of motor also is included.

Circle No. 112 on Reader Service Card

POTERITIAL PROFITS in the soft ice cream business are outlined is an attractive, 3-color catalog available from Port Morsis Machine & Tool Works, Inc. Cut-away illustrations of the com-pany's complete line of ice cream freezers clearly depict the many new advances made in Electro Freeze equipment.

Circle No. 113 on Reader Service Card

FRACTIONAL HP ELECTRIC MOTORS are reviewed in detail in a new catalog (RB-400) just released by Redmond Ce., Inc. Included in the printing on the MicroMotor line is information on the company's MonoMotors, blowers, and special products. Photographs, diagrams, and performance data round out the catalog.

Circle No. 114 on Reader Service Card

OPERATING CHARACTERISTICS and construction features of air-cooled compound high vacuum pumps are reviewed compre-New York Air Brake Co. Complete specifications and dimensions, pumping speed curves and photographs are included for each model, in 4-page, 2-color publication.

Circle No. 115 on Reader Service Card

VIBRATION ISOLATION is explained and outlined in Bulletin VAC-11 produced by Vibration Mountings, Inc. Described are various methods available for preventing transmission of vibra-Included are chart of theoretical material Isolation efficiencies based on rpm, as well as outline recommendations for isolating contrifugal and reciprocating compressors (V-W type), air handling units, and contrifugal fans and pumps.

Circle No. 116 on Reader Service Card

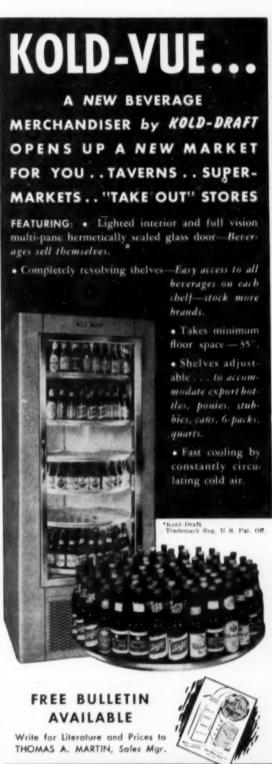
SET OF FIVE insulation case studies, illustrating how actual insulation problems in the meat packing industry were solved, is available from Pittsburgh Corning Cerp. The reports, bound in neat spiral binder, utilize text, photographs, and detail drawings to explain installation procedures, insulation thicknesses used and results in each case.

Circle No. 117 on Reader Service Card

HEAT EXCHANGER FUNCTIONS are illustrated and explained in multi-color, Niagara Blower Co., Bulletin 132. Benefits of sectional design listed stress shipping and installation features.

Circle No. 118 on Reader Service Card

(See page 90 for Air Conditioning Literature)





KOLD-VUE . IS A PRODUCT OF THE KOLD-DRAFT DIVISION UNIFLOW MANUFACTURING CO. EAST LAKE ROAD, ERIE, PENNSYLVANIA

Circle No. 46 on Reader Service Card



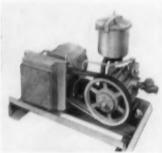
For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your request will be forwarded directly to the companies concerned.

(For Air Conditioning Products turn to page 93)

High Vacuum Pump

Product: Air-cooled rotary high vacuum pumps.

Manufacturer: Leiman Bros., Inc., Newark, N. J.



Features: Radiator-cooled lubricating system, pumps produce vac-uums of 24 to 29.9" Hg., with capacities of 15 to 40.8 cfm, for continuous operation, at average temperatures of 140 F. Lower operating temperature is maintained by circulating pre-cooled SAE 30 lubricating oil through pump. Constant re-circulation of oil through radiator maintains constant low operating temperature. Lubricating effect helps prevent carbonization of oil. Pump can not overheat, volumetric efficiency is increased and pump speeds up to 800 rpm are made possible to provide greater air capacity in smaller size pump. Cooler oil also helps eliminate vapor problem. Elimination of water-cooling removes need for water pipes; eliminates wasteful use of water, leakage problems, and inconvenience of placing pump near water supply. Measures 30" long, 21" wide, and 27" high.

Circle No. 137 on Reader Service Card

Replacement Housing

Product: Replacement housing kit for modernizing existing refrigeration units.

Manufacturer: Drayer-Hanson. Inc., Div. of National-U. S. Radiator Corp., Los Angeles, Calif. Features: All-aluminum hous-

ing has baked-on white enamel finish.

Includes side panels, access door, bottom panel, fan-guard, and necessary screws and nuts. Housings are available for nine models in "Spasaver" line. Outside dimensions range from 24-3/8 x 26-7/8 x 10" up to 53½ x 39½ x 13½." Housing drops out of place by removal of four screws for easy installation. Circle No. 138 on Reader Service Card

Rubber Tubing

Product: Closed cellular rubber

Manufacturer: Rubatex Div., Great American Industries, Inc., Bedford, Va.

Features: Developed to stop condensation on copper-formed cold



"slip-on" tubing insulation readily bends without cutting or fitting and fits snugly to any contour of pipes. For application on cold carriers already installed, can be slit lengthwise, snapped around piping, and sealed with adhesive. Has unique, nitrogen-filled, closed cellular structure which repels water and moisture. Fire-safe, tubing has good thermal insulation properties - a low K-factor of .28 at 75 F which remains constant as it will not deteriorate in service, manufacturer says. Produced in any lengths up to

Circle No. 139 on Reader Service Card

BUY FROM YOUR REFRIGERATION WHOLESALER Storage Cabinet

Product: Reserve storage cabinet (SC-20) for storing ice cream and frozen food

Manufacturer: Kelvinator Div. American Motors Corp., Detroit,

Features: 19.4 cu. ft. cabinet



is only 36" wide. Three shelves are adjustable to any position, or may be removed completely. Enameled steel shelves will hold maximum loads and provide versatile storage that includes packaged ice cream of all sizes and up to 3-gallon cans, or combinations of packages and cans, or frozen food in standard 10-oz. packages. Freezing coils on all sides, top and bottom, protect contents in sub-zero temperature with no frost build-up. Vinyl gasket on door helps seal in cold. Thermostat control is easy to reach at top of cabinet interior. Vertical door handle has builtin lock that is easy to operate. Radiant, shell-type condenser never needs cleaning. Fanless 1/3-hp compressor operates from 115 volts. Measures 33" deep and 681/4" high.

Pistol-Grip Hacksaw

Product: Pistol-grip "Leytool" hacksaw that gives operator complete control.

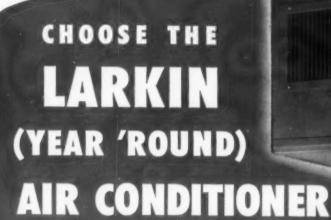
Circle No. 140 on Reader Service Card

Manufacturer: Hallbee Products Co., Parma, Mich.



Features: Depth of cut is unlimited since entire frame remains on operator's side of material. Sliding blade support has molded finger

# For Looks • Long Life • Low Installation Cost



5 MODELS - 2 TO 10 TONS

# Cools or heats • De-humidifies Filters • Circulates Air

Here is Larkin's answer to the ever-increasing demand for year-round comfort conditioners. When you see it . . . when you compare it . . . when you price it . . . then you will understand why we say it is another triumph for Larkin—manufacturer of airconditioning equipment for nearly 25 years.

See your wholesaler today for complete information about the all-new Larkin Comfort Conditioner. Write us for the name of the one nearest you—or for descriptive literature.



"Originators of the Cross Fin Coil"

LITTURE GOLGE INC.

Ideal for:

STORES BARS

SHOPS GRILLS

OFFICES RESTAURANTS
BAKERIES FLORISTS

CUNICS

### FEATURES THAT SELL AND SATISFY

- Larkin air-conditioning coil—eight fins per inch, continuous fin, staggered tubes, for highest efficiency and lowest operating cost
- Compact cabinet, all-steel, rust-resistant, beautifully finished with baked-on enamel
- Fiber-glass insulation
- Pressure-type, centrifugal, dynamically balanced, forward curved fan wheels
- Frictionless, self-aligning bearings completely encased in Neoprene
- · Resilient base motors on adjustable mounts
- Two-direction, adjustable discharge grille
- · Easily removed, throw-away filters
- · Heating coils for use with steam or hot water
- Slotted hanger bars
- · Easily installed, easy to service
- Backed by the engineering skill and manufacturing reputation of Larkin Coils one of America's leading makers of commercial and industrial refrigeration and air-conditioning equipment

rest. Once saw cut is blade deep or, when starting with drilled hole on inside cuts, nose of apring-loaded blade support rests against material being sawed and only blade moves back and forth through cut. Ample support for blade is provided as finger rest stays directly above portion of blade doing cutting. Made of diecast aluminum and English steel, three hardened steel balls provide bearing surface against top and both sides of blade. Circle No. 141 on Reader Service Card

BUY FROM YOUR REFRIGERATION WHOLESALER Gauge Port

Product: Detachable hermetic

gauge port (Tapaline, Jr.).

Manufacturer: Mechanical
Refrigeration Enterprises, North Hollywood, Calif.



Features: Multi-sized, all-purpose unit fits tube sizes 1/4, 5/16, and 3/8". Master valve permanently

locks saddle member to checking spot, then unscrews for reuse. Remaining saddle, weighing less than 1 oz., and those later installed by master valve along line when checking, may be purchased at considerable savings in initial unit cost. Permanent saddles only leave minor protrudance after installation tests, manufacturer claims. Positive sealing aided by gasket under screw head; needle component piercing line to provide self-sealant on tube itself; gasket which fits between tubing and saddle; and gasket po-sitioned on body to seal against cap. Forged brass body has smoothturned steel handle.

Circle No. 142 on Reader Service Card

# **HOW TO GET 230 Volts** FROM A 208 Volt CIRCUIT

208 VOLTS GOES IN HERE



**228.8 VOLTS** COMES OUT HERE

As a quick and economical method of supplying normal voltage (220, 230 or 240 volts) single phase from available under voltage circuits (197, 208, or 214 volts) this series of transformers will solve many application problems. For example, the installation of air conditioning equipment in an office or commercial building, where only lighting circuit voltage is available may require the installation of a separate circuit connected from two legs of a power line; such connection providing 208 volts single phase. This 208 voltage, not being sufficient to develop full starting torque of the 230 volt single phase motor, may cause the motor to operate constantly on starting windings and this would result in overheating and possible burn-out.

The Boost and Buck series of transformers are essentially 4 winding insulated transformers in which the separate windings are interconnected so as to provide essentially the same voltage tapping characteristics as an auto transformer. In effect the secondary winding voltage is added to the input voltage thus boosting the output voltage 5% or 10% as desired.

Acme Electric Boost & Buck transformers are available in capacities to meet the needs of any installation from 1/4 ton units to commercial types requiring up to 105 KVA electrical capacity. Write for Catalog BB-199.

ACME ELECTRIC CORPORATION CUBA, NEW YORK



Circle No. 48 on Reader Service Card

Solenoid Valve

Product: Diaphragm-type sol-enoid valve (K-181) to meet need for "off-the-shelf," multi-purpose

Manufacturer: General Con-trols Co., Glendale, Calif.



Features: Capable of handling large capacities with minimum pressure drop, making it suitable for shut-off control of large variety of liquids and gases over wide range of operating pressures up to 250 psi. Available in 3/8" and 1/2" ips, and in two basic models. Standard model handles wide range of applications using air, water, gases, or light oils. Hot water models are suited particularly for controlling water at temperatures up to 200 F

Circle No. 143 on Reader Service Card

Outdoor Condenser

Product: Semi-hermetic outdoor condensing unit.

Manufacturer: Brunner Co., Gainesville, Ga.

Features: Totally air-cooled, is available in either 2 or 3-hp and known as Models RAC-2 and RAC-3. High capacity for operation in ambient temperatures up to 120 degrees. Easy to install, for use in air conditioning and commercial refrig-

# Johns-Manville organizes to give you better insulation service

New and separate insulations division created to provide industry greatly improved Sales and Engineering service to meet modern problems

 Johns-Manville is now concentrating all industrial insulation operations within a new, fully integrated insulations division. This greater specialization makes possible the most complete insulation service available to industry. It consists of—



Sales Representatives . . . men on whom you can rely for your insulation recommendations. Your J-M salesman will help you select the insulating material exactly right for your job—the one that will provide maximum fuel savings, improved process control, and minimum maintenance.

As co-ordinator of J-M's extensive research-engineeringmanufacturing facilities, he offers you outstanding insulation training and experience.



Insulation Engineers—Backing up the J-M salesman on every job is the J-M insulation engineer. He is primarily concerned with solving insulation problems. He recommends the economic thickness of insulation, as well as the

proper finishes, weatherproofing and securement. His highly specialized knowledge makes possible an intelligent recognition and handling of your individual insulation requirements.



Insulation Contract Units...
Fully aware that no insulation is better than the man who applies it, the J-M Insulation Contractor makes care and skill in the scientific application of Johns-Manville insulations his stock in trade. He maintains a complete crew of

estimators and mechanics trained in J-M application techniques. He is ready to give you fast, efficient service on any insulation job—large or small. Proud of his reputation for integrity in his own community, the J-M Insulation Contractor merits your complete confidence.



Complete Range of Products— In this day of exacting temperature control, the need for specific insulations for specific services is greater than ever before. Recognizing this, Johns-Manville manufactures insulations for every industrial requirement. Produced

from the finest grades of asbestos, magnesium carbonate, diatomaceous silica, refractory clays and ceramic fibers, they are designed to afford maximum insulating effectiveness and durability at operating temperatures ranging from minus 300F to plus 3000F.



Extensive Research Facilities—At Manville, New Jersey, Johns-Manville maintains the world's most completely equipped insulation laboratory. Here insulation scientists are engaged in a continuous program of developing new and better insulating ma-

terials. In addition, their technical knowledge is always available to J-M customers whose insulation problems require special study.



Experienced Management—At headquarters as well as in the field, management of the new insulations division consists of men who, in line with J-M's promotion-from-within policy, are insulation veterans. With a realistic grasp of customers' needs, they are alert to new and better ways

to serve you . . . now, and in the future.

On Your Next Insulation Job—Whether your next insulation job is big or little, simple or complex, let Johns-Manville handle it for you. Just call your nearest J-M sales office, or write direct to Johns-Manville, Box 14, New York 16, New York. In Canada, Port Credit, Ontario. Chances are, you'll be glad you did!



Johns-Manville

first in 1

INSULATION

MATERIALS . ENGINEERING . APPLICATION

Circle No. 49 on Reader Service Card

eration in residential locations where water is scarce or prohibitive in cost, and in buildings lacking base-



ment space. Enclosed in weatherproof steel cabinet. Measures 40" long, 32" deep, and 251/4" high, and

MOTOR

CAPACITORS BY C-D

may be placed adjacent to building at ground level or installed in roof construction. Full 1000 cfm condenser air per ton is supplied while powerful centrifugal blower moves air quietly and positively regardless of wind direction. Readily accessible control panel.

Circle No. 144 on Reader Service Card

Water Coolers

MKV

ASIC UNIT

Product: "Constellation Series" of Oasis water coolers.

Manufacturer: Ebco Mfg. Co., Columbus, Ohio,

Features: Stainless steel top facilitates faster water removal and increases cleanliness. Cooling capacities have been increased as much as 40% in some models. Bottle-type cooler (BR-HC) has sizable refrigerated compartment which makes



and keeps two full trays of ice cubes Delivers piping hot water for making instant coffee and other hot beverages and soups. Hand or foot-operated models are available in 2 to 35-gallon capacities; standard or "Hot 'n Cold"; and bottle or pres-

Circle No. 145 on Reader Service Card

**Glass-Top Cabinets** 

Product: Sliding-glass-top, mer-chandising cabinets, Models ICGV-150 and ICGV-220.

Manufacturer: Frigidaire Div., General Motors Corp.



Features: Can be operated at normal refrigeration temperatures of 35 to 40 F. Model ICGV-150 has gross capacity of 15 cu. ft. and Model ICGV-220 has gross capacity of 22 cu. ft. Of all steel construction and finished in white enamel. Slidingglass lid consists of two triple-thick glass thermopane, stainles steel frame assemblies. Ample display shelf area is equipped with lighted shadow-box picture frames.

Circle No. 146 on Reader Service Card



THERE ARE MORE C-D CAPACITORS IN USE TODAY THAN ANY OTHER MAKE

Circle No. 50 on Reader Service Card

Product: Line of cooling towers in 15, 20, 25, 30, 40, and 50-ton sizes. Manufacturer: Master-Bilt Refrigeration Mfg. Co., St. Louis, Mo.



Talk to the engineers who designed the motors you repair! Ask them why, for 45 years, C-D capacitors have been "the standard" for all the really heavy load motor starting jobs. They'll tell you:

"C-D means Consistently Dependable."

No wonder there are more C-D capacitors in use today than any other make!

Always insist on C-D capacitors-there's

Ask your C-D distributor for your free

copy of C-D's famous motor capacitor

Cornell-Dubilier Electric Corporation,

just the right type for every motor made.

Manual and Catalog No. 163. He's listed in your classified 'phone book. Dept. CR 75

Cooling Towers

# WHY PAY MORE

# FOR CONDENSER CLEANER WHEN THE BEST COSTS 30% LESS?

ANCO CONDENSER CLEANER is second to none for effectiveness, speed and safety, yet it costs about 30% less than other leading brands. This exclusive formula is simply dissolved in the sump while the system is in operation. Within a few hours, the condenser tubes are free of scale and head pressure is down to normal. ANCO is safe for servicemen to use and absolutely harmless to equipment. So why pay more when you can't buy better? Buy ANCO CONDENSER CLEANER and make more profit on every cleaning job.

# FREE!

### WATER TREATMENT MANUAL

A complete booklet on the control of scale, rust and algae in refrigeration and air conditioning systems. No service department should be without a copy. It's yours for the asking.



Sold by wholesalers of air conditioning and refrigeration supplies

SPECIALISTS IN MAKING WATER BEHAVE



Anderson Chemical Company, INC.

ox 1424 . MACON, GEORGIA .

Phone 5-0466

Circle No. 51 on Reader Service Card

Features: Recessed fan venturi provides more compact appearance. Removable redwood decking has 25% more evaporative surface than other towers of same capacity, manu-



facturer says. Quiet propeller-type fan has 44-degree pitch. Is V-belt driven with motor pivot-mounted for easy adjustment of belt tension. Has exterior lubrication fittings. Adaptable to indoor or outdoor installation.

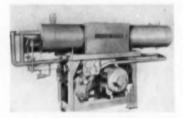
Circle No. 147 on Reader Service Card

Packaged Chillers

**Product:** Line of completely packaged and tested water chillers (Type CC)

Manufacturer: American Blower Corp., Detroit, Mich.

Features: Available in capacities from 20 through 150 tons. Each unit consists of base and frame work, reciprocating-type Freon-22 compres-



sor, direct-expansion chiller section, heat exchangers, control panel, electric drive motor and associated valves, strainers, and gauges. Has copper tubing with star-shaped aluminum insert. Tubing has more than double the heat-transfer surface of plain tubing and adds 25% more cooling capacity per cubic foot of chiller size. Chiller element has shell of seamless steel tubing with tubes of 34" OD seamless copper - rol-ler-expanded into tube sheets. Water connections 3" and smaller are extra heavy pipe couplings. Connections larger than 3" terminate in 150-lb. A.S.A. steel flanges with threaded cast iron companion flange.

Circle No. 148 on Reader Service Card

Sub-Zero Cooler

Product: Sub-zero, 1 cu. ft. rivet cooler (Model WE-1-40) weighing only 68 lbs.

Manufacturer: Webber Engi-

neering Corp., Indianapolis, Ind.

Features: Can be moved easily for convenience to work area. Requires only connection to electrical service to place in operation, 25 aluminum canisters with perforated bot-toms are held in cadmium-plated rack of storage compartment. Each canister will hold I lb. of 17 or 24 S.T. aluminum rivets. While temperature requirement for aluminum rivet storage is -30 F, unit has maximum range of -50 F. By storing at -30 F immediately after treatment rivets remain soft, workable, and



head perfectly without danger of cracking and splitting. Rivet compartment measures  $11\frac{1}{2}$ " long x  $11\frac{1}{2}$ " wide x  $12\frac{1}{2}$ " high. Outside dimensions of refrigerator are 21 x 21 x 28". Mechanical safety locking device prevents access to rivets in cooler if temperature of storage chamber rises to -20 F. Has thermometer for interior temperature.

Circle No. 149 on Reader Service Card

Turbine-Type Pump

Product: Series APCO-Z4 turbine-type, single and double-stage process pumps for handling liquefied petroleum gases, refrigerants, and other light non-viscous liquids.



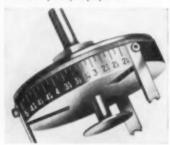
Manufacturer: Aurora Pump Div., New York Air Brake Co., Aurora, III.

Features: Available in any machinable alloy such as nickel, monel, and stainless steel. Operates at low suction head requirements assuring positive, non-pulsating flow, manufacturer says. No shaft leakage because minimum pressure is exerted against mechanical seal through use of built-in pressure relief. Balance holes on both sides of impellers equalize pressures in single-stage pumps resulting in balanced hydraulic loads.

Circle No. 150 on Reader Service Card

Dial Saw

Product: Model 500 dial saw with increased cutting range for use with heavy-duty equipment.



Manufacturer: Robertson & Ruth, Elmhurst, Ill.

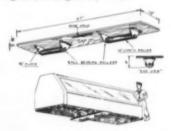
Features: Cuts perfect holes quickly and accurately in any size from 21/2 to 5" in diameter. Turn of calibrated dial immediately sets high speed steel cutter blades to diameter desired. Made from high alloy steel, with black rust-resistant finish. Available in three shank-types: Model 500 with ½" straight shank; Model 500A with ¾" straight shank; and Model 501 with Morse No. 2 taper shank. Furnished with interchangeable 1/2" pilot drill and push-out plug, and two sets of high-speed, steel cutter blades.

Circle No. 151 on Reader Service Card

"Roller Dolly"

Product: "Roller Dolly" for moving heavy refrigeration cases.

Manufacturer: Store Engineering Co., Youngstown, Ohio,



Features: Made of 34" hard oak lumber with two 2 x 10" heavy steel rollers mounted side by aide. One man easily can handle 12' refrigeration case or crate and make complete turn in object's own length.

Circle No. 152 on Reader Service Card

Plaster Groove Cutter

**Product:** "Electric Plaster Groover" tool for cutting grooves in plastered walls.



Highly flexible, Armaflex fallows contours of piping or tubing without any special cutting or fitting. If lines are in operation, slit Armaflex lengthwise, snap in place, and seal with Armstrong 520 Adhesive.

# New insulation for liquid cooling and heating lines

# goes on in one fast operation

Armstrong Armaflex® is a new kind of foamed plastic insulation for both commercial and residential air-conditioning and heating lines. Remarkably flexible, it slips right over pipes and copper tubing, follows contours without special cutting or fitting. If lines are already in operation, you can slit Armaflex lengthwise, snap in place, and seal with Armstrong 520 Adhesive. Armaflex is clean to work with, too; it will not rub off, chip, or crumble. Waste is negligible.

A highly efficient material, Armaflex has a K-factor of 0.28 at 75° F. In ½" thickness, Armaflex will prevent condensation under normal design condi-

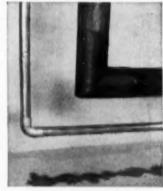
tions on indoor lines operating as low as 32° F. The insulation's closed cellular structure is exceptionally moisture resistant, eliminates the need for a separate vapor barrier. A self-extinguishing feature makes Armaflex completely safe to install before sweat fittings are made.

Armaflex comes in 6' lengths for copper tubing and iron pipe %'' to 3%'' O.D. Thicknesses of %'' and %'' are available.

For free booklet containing complete data on this remarkable new insulation, write to Armstrong Cork Co., 2009 Rumford Avenue, Lancaster, Pa.



Residential as well as commercial airconditioning and heating systems perform more efficiently when insulated with Armstrong Armafiex. It goes on fast, makes a neat, clean job.



Condensation is prevented by Armaflex's vaporproof composition. Countless, uniformly sized cells seal out moisture and air, give Armaflex its low K-factor of 0.28 at 75° F, mean temperature.



Rapid fabrication of fitting covers is accomplished by miter-cutting pieces of Armstrong Armaflex, cementing them together with Armstrong 520 Adhesive to form a vaporproof joint.

# Armstrong INDUSTRIAL INSULATIONS

Circle No. 52 on Reader Service Card

Manufacturer: Wodack Electric Tool Corp., Chicago, Ill. Features: Has guard equipped

Features: Has guard equipped with nozzle for attaching hose of commercial vacuum cleaner to solve plaster dust problem. Permits laying of electric conduit and metal tubing with minimum of labor and mess. Eliminates chipping or cracking of plaster. Universal motor operates on AC or DC current. Has 6 x ½ x ½ abrasive wheel with adequate guard, and support handle. Connection opening is closed when cleaner is not used. Handle has trigger awitch and 15' of Neoprene cord with plugin for any outlet. Entire unit is 18" long and weighs only 16 lbs. Ideal

for installing temperature control systems, 6" abrasive cutting wheel makes single cut, up to 134" deep, through plaster, lath, brick, or concrete.

Circle No. 153 on Reader Service Card

Vapor Degreaser

**Product:** Model 22 solvent vapor degreaser.

Manufacturer: Tect, Inc., Du-

Features: Can be operated with either "Vythene", Trichlorethylene, or Perchlorethylene, requiring only minor adjustments of thermostatic controls. Main body is of galvanized steel with coating of black Epodax solvent-impervious resin to reduce heat loss. Stainless steel coil is mounted as condenser inside chamber, and additional safety is provided by two thermostatic controls. Lower thermostat is mounted above condensing coil as safety device to prevent solvent vapors from going



out into room in event water supply fails. Red neon light shows when machine is on. Requires about 13 gallons of solvent for operation and has production capacity of about 350 lbs. of metal per hour. Wire mesh and expanded metal basket, 18" in diameter, and work rest, both galvanized, also are provided.

Circle No. 154 on Reader Service Card

Lever Float Valve

**Product:** Fig. 600 heavy duty compound lever float valve,

Manufacturer: Robert Mfg. Co., Los Angeles, Calif.



Features: Unit made of brass in sizes 1½ and 1½", accurately maintains liquid levels with positive shutoff. Applications include large cooling towers or evaporative air conditioning units, evaporative condensers, industrial processing, water storage tanks. Because of efficiency of compound lever mechanism, a 6" diameter ball with 10" stem will provide satisfactory operation at inlet pressures up to 150 lbs.

Circle No. 155 on Reader Service Card

### Flow Control Valves

**Product:** Line of "Quick-Dump" flow control valves.

Manufacturer: Humphrey Products, General Gas Light Co., Kalamazoo, Mich.

Features: Units utilize single





Jarrow Condenseal Sponge Tubing is tough, flexible sponge rubber, made up of uniform, non-connecting cells that effectively block moisture passage! Its non-absorbent quality makes it ideal for pipe insulation.



Withstands temperatures from -40°F. to +225°F. Thermal conductivity of Condenseal is .28 at 75°F, with no deterioration.

Condenseal is available through your Wholesaler.

Ask your Wholesaler for the new Jarrew Catalag C-300, today.

PROFIT-MAKER FOR YOU

INCREASES YOUR
CUSTOMERS'
SATISFACTION

AVAILABLE IN



Circle No. 53 on Reader Service Card



THE SIZE, SHAPE

AND QUALITY ...

to fit your job best!

CHASE COPPER SOLDER-JOINT FITTINGS

Efficiency comes naturally to refrigeration and air conditioning systems made with Chase wrought copper solder-joint fittings! Flow of coolant is bound to be smooth and rapid. Flawless Chase fittings have no shoulders or rough interiors to cause turbulence or increase friction.

Couple Chase wrought fittings with Chase copper tube for really outstanding performance. They fit each other perfectly. Expand and contract as one rugged unit.

Use Chase wrought copper solder-joint fittings, clean-capped Chase Type L tube, and Chase extrasoft copper refrigeration tube. Your Chase wholesaler has a complete selection right on hand. Send him an order today!

Chase &

WATERBURY 20, CONNECTICUT SUBSIDIARY OF KENNECOTT COPPER CORPORATION



The Nation's Headquarters for Brass & Copper

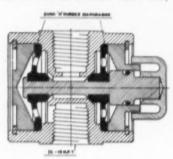
Attanta Baltimore Boston Charlotte Chicago Cincinnati Cleveland Dallies Denver Detroit Grand Rapids Houston Indianapolis Kansas City, Mo. Los Angeles Milwaukee Minneapolis Newark New Orleans New York Philadelphia Pittsburgh Providence Rochester St. Louis San Francisco Seattle Waterbury

Circle No. 21 on Reader Service Card

& AIR CONDITIONING . SEPTEMBER, 1956

69

basic valve body for use either normally open or normally closed, depending upon port connections. Variety of simple devises may be added for triggering valve action. Models currently available are solenoid, camoperated, palm button, finger-tip, foot-operated, and two types with hand lever. Pressure of air or liquid effects opening, closing, and holding action. Valve action is triggered by light touch. No internal packings, springs, or pistons, no sliding of metal-to-metal contacts. Valve body



is machined from solid bar steel with corrosive-resistant finish and is equipped with "Buna-N" rubber diaphragms. Valve is adapted for applications up to 125 lb. psi and under temperature variations from -40 to 225 degrees.

Circle No. 156 on Reader Service Card

**Axial Flow Pump** 

**Product:** Totally enclosed fancooled, motor-driven pump.

Manufacturer: Ruthman Machinery Co., Cincinnati, Ohio.

Features: Vapor seals positively prevent entry of liquid through mounting flange and vapors can't en-



ter motor and ball bearings. Seals do not require adjustment, maintenance, or replacement because they operate on centrifugal principal instead of metal-to-metal or other close contacts. Powered by Nema motors which permit continuous operation without endangering motor or bearing life. Available in ¾ to 3-hp at 1200 rpm. Capacities are 380 to 2000 gpm at low pressure heads and in pipe sizes from 6 to 12".

Circle No. 157 on Reader Service Card

Direct Draw Tap

**Product:** Redesigned line of stainless steel direct draw taps.

Manufacturer: Nor-Lake, Inc., Hudson, Wis. Features: Beer faucets and optional water station are mounted in dome, which utilizes cabinet tem-



perature and air circulation to refrigerate beverage lines up to and including faucet heads. Only one degree difference between temperature at bottom of box and at top of insulated dome. Waste drain (1½" brass tube) has been raised to 18" above floor to permit installation of drain traps when through-the-floor plumbing is not practical. Large diameter permits easy cleaning and flushing. Top with overhanging front edge stops accidental waste drippage on cabinet front and door gasket. Circle No. 158 on Reader Service Card

Oil Coolers

**Product:** Line of "WIO" oil coolers for use wherever oil must be cooled efficiently in compact unit.

Manufacturer: Heat-X, Inc., Brewster, N. Y.



Features: Inner-fin construction permits more cooling in less space. Completely non-ferrous with brass shell and copper tubes. Units are available for operating pressures up to 250 psi and operating temperatures to 300 F.

Circle No. 159 on Reader Service Card

Cargo Enclosure

**Froduct:** All steel cargo enclosure ("Canopy Top") for ½, ¾, 1, and 1½-ton service bodies.



Manufacturer: Service-Master Div., McCabe-Powers Auto Body Co., St. Louis, Mo.

Features: 24" high, providing 53" floor-to-roof height when bolted to compartment tops on each side of body. Strap-hinged double rear doors are equipped with two-point rod lock operated by keyed, automotive-type handle. 10 x 15" window is installed in each door and in head panel. Each side furnished with two fulllength shelves.

Circle No. 160 on Reader Service Card

Industrial Tape

Product: No. 124XN-T, highgrade adhesive-backed felt tape.



Manufacturer: Spring Packing

Corp., Chicago, Ill.

Features: One side is coated with extra-powerful, pressure-sensitive adhesive applied in "track form." Ideal for use in air conditioning field, it can be applied with finger pressure. Seals against dust, dirt, wind, fumes, and moisture. Supplied in roll form and in die-cut and segmented form. User is able to pull off each successive piece from roll-like postage stamps.

Circle No. 161 on Reader Service Card

Truck Tool Box

**Product:** All steel tool box for small hand or power tools carried on truck.



Manufacturer: Wilhelmsen Sheet Metal Works, South Gate, Calif.

Features: Designed to fit all standard pickup trucks and easily is installed with minimum rear view obstruction. ½-ton size 13 x 15 x 71" long; ¾-ton size 13 x 15 x 84" long.

Circle No. 162 on Reader Service Card

#### SELL SAVINGS . . .

Continued from page 53

muth beer . . . and the brewery needs all it can get.

Large quantities of water are needed in the brewery to cool canned and bottled beer, after it is pasteurized, from 140 F to 70 F as it moves through the final cooling tanks on conveyors. Fifteen gallons of water used to be needed to cool a barrel of beer: but since the cooling towers were installed. only 10 gallons are required.

Each of the three towers has a 60-ton nominal capacity, and circulates 180 gpm of water - a total of 540 gpm served by the single pump which is located adjacent to a sump tank in the building's basement.

Water flows from the towers to the conveying machines at the beer cooling stations by gravity, and thence to the tank in the basement. A novel loop arrangement allows the towers to drain the instant the pump is shut off, eliminating the danger of freezing in cold weather. This loop is located in a heated space under the roof of the building, and water standing in horizontal lines will overflow to the tank below.

The brewery estimates that the cooling tower system saves about \$6 a day in water costs alone, a total of \$2,190 per year. But that isn't the whole story-because if water-saving equipment had not been installed it would have been necessary to build a costly addition to the brewery's water plant, which was approaching its limit of capacity. The cooling towers used in the Frankenmuth installation were supplied by J. Geo. Fischer & Sons of Saginaw and Detroit.

#### AEROVOX EXEC FETED

Charles Golenpaul, retiring president of Aerovox Corp., received the first annual award (a gold plaque) of the Radio Old Timers Club at the Electronic Parts Chicago convention. The award is symbolic for outstanding contribution to manufacturer, distributor, and representative relationship in the electronic industry.

# A SERVICE VALVE where you want it ... Service HERMETIC UNITS on the job! With "WATSCO'S" Line Tap Valve-

- TESTS
- CHARGES
- DISCHARGES





CV-I Control Valve

AS INSTALLED ON 3 TON MATHES UNIT







AS INSTALLED ON 34 TON CARRIER UNIT

# 3 POINT SEALING FOR MAXIMUM PROTECTION

AVAILABLE IN 5 SIZES at Your Favorite Wholesoler

Part No. LT-3 for 3/4" tubing Part No. LT-4 for 14" tubing Part No. LT-5 for %" tubing Part No. LT-6 for %" tubing Part No. LT-8 for 1/4" tubing

ONE PRICE VALVE - regardless of size. Small, compact Hermetic Valve easily installed on the lines of systems, piercing the tube without loss of refrigerant. Provides a port for charging, discharging or testing.

Conforms to tube, eliminating top heavy assembly . . . will not loosen or develop leaks due to vibration . . . will not bend or crimp tubing.

Use this line-tap valve with "Watsco" CV-1 Control Valve.

ASK FOR YOUR WATSCO CATALOG

1020 East 15th Street



WATSCO PRODUCTS Manufactured By
TOOL & SUPPLY CORP.

HIALEAH, FLORIDA

# BUSINESS IS PROFITABLE

with

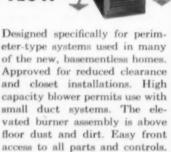
anitrol quality

Don't sacrifice your profits or reputation on "bargain-basement" brands! These gas-fired Janitrol Winter conditioners assure fewer call-backs, less servicing and greater customer satisfaction.

# THE (VERTICAL UP-FLOW)

Always your best-seller for either new homes or modernization. Your choice of two models, either the famous Dura-tube design (with practically indestructible heat exchangers) or the Pace-setter model (popularly priced). They're compact and attractive ; . . completely accessible from front. Extra quiet for installation close to living areas. 10 models 60,000 to 120,000 Btu/hr. input.

# ALL-NEW DOWN-FLOW



Available in 80,000, 100,000 and

120,000 Btu/hr. inputs.

# HORIZONTAL SPACEMAKER



Gives you unusual flexibility. Installs suspended or on the floor in attic, crawl space, garage or basement. Adaptable to all distribution systems . . . conventional, perimeter or radiant. Easy access from either side. This model also gives top performance as a commercial-industrial unit heater. Filters are optional. Four sizes, from 65,000 to 150,000 Btu/hr. input.

#### THIS HEATING HEART

#### **EXCLUSIVE . AMPLI-FIRE RIBBON BURNERS**

Intense heat from a quiet, clear blue ribbon of flame is accurately centered below each heat exchanger tube. This burner assembly is easily removed without disturbing pilot, manifold or piping. The non-rusting, alloy burner ports are cleaned in just a few seconds.



#### MAKES THE DIFFERENCE

#### **EXCLUSIVE • MULTI-THERMEX HEAT EXCHANGERS**

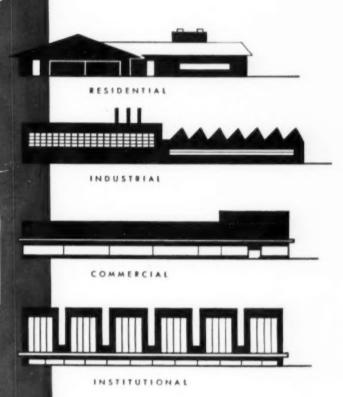
Every furnace has several of these welded, dieformed steel exchangers that give extra heat transfer area . . . maximum heat extraction. This results in faster heating, higher efficiency and greater durability. Since 1940, Multi-Thermex replacements, for any cause, have been less than ½ of 1%!

Janitrol HEATING AND AIR-CONDITIONING

Surface Combustion Corporation, Columbus 16, Ohio In Canada: Meffets Ltd., Tereste 15



ATING . CIRCULATION AND HUMIDITY CONTROL



# READER'S GUIDE

Almost for Free								*			75
How's Your Air Conditioning I.Q.?		,							*		76
Steam-Jet Coolers — How They Work				*			 *				80
Use Waste Steam for Cooling		,			*						 81
Factory Cooling — New "Industrial Revolu	11	0	n'	1	*			K			 82
Just How Big Is a "Package" Installation .	6 1		* *			×	 	*	k		 84
Just Scratching the Surface	* *		r 8	*	×		 	*			 88
Useful Air Conditioning Literature		× ×	* *		*	k					 91
What's New in Air Conditioning Equipment	+				*	*					 9



EW

*this* PEERLESS PUMF

# MERCHANDISING IDEA

We've picked out 22 of the most popular END-SUCTION PUMPS and prepackaged them for easy stocking, easy storing, easy ordering, easy application and easy selling.

EASY STACKING

EASY STOCKING

EASY SELLING

New bulletin (with sample pages shown) gives all REDI-PAK facts. Camplete with selection charts and performance curves. You can buy and apply from bulletin. Mail caupon for your capy now.



WE CALL THEM PEERLESS

# Fluidyne REDI-PAK pumps

Sizes from 1 x 2 x 6 (1 hp) to 2% x 3 x 10 (15 hp)

Read about this profitable selling idea in our new REDI-PAK BULLETIN

USE COUPON FOR YOUR COPY

FROM OVER 50 TYPES and sizes of end-suction numps Peerless has

of end-suction pumps Peerless has selected 22 of the most frequently ordered integral hp Fluidyne pumps. We've packaged and labeled them. And they're ready to order under our Redi-Pak Label. All you do is to buy and supply them right from our selection chart. No changes to make. They're easily handled in cartons. Your customers get clean merchandise. You stock popular models that fit almost 4 out of 5 of all integral hp, end-suction pump applications.

Read all about it in the new fully illustrated bulletin, pictured at the left. From it you can buy and apply these pumps with confidence. Mail coupon for your copy and see for yourself how this new Peerless Redi-Pak pump merchandising idea will solve a lot of your pump stocking, ordering and application problems—quickly, efficiently and with greater profit. Do it now!

# PEERLESS PUMP DIVISION

FOOD MACHINERY AND CHEMICAL CORPORATION 301 WEST AVENUE 26, LOS ANGELES 31, CALIFORNIA



Factories: Los Angeles 31, California and Indianapolis 8, Indiana

Offices: New York; Atlanta; Chicago; St. Louis; San Francisco: Phoenix; Fresno; Los Angeles; Plainview and Lubbock; Texas; Albuquerque. Distributors in Principal Cities. Consult your Telephone Directory.

Please send me Peerless Redi-Pak Pump Bulletin No. B-2319

NAME

COMPANY

ADDRESS.

CI

STATE

CRAC

Circle No. 57 on Reader Service Card

# This system provides year-round air conditioning

# Almost for Free!

Two-way use of this industrial plant's process water for heating as well as cooling holds air conditioning operating costs to an absolute minimum.



TWO METHODS of air distribution are employed in the Cowles plant installation. Air is delivered to general office areas (above) through circular ceiling diffusers. Private offices like that of plant manager N. E. Woonton (below) are handled individually by use of fan-coil room air conditioning units.



Next time you tackle an industrial air conditioning job, take a good, hard, "second look" at the plant, its processes, and all other factors involved, to be sure that in planning the system you make the most of any natural advantages which might enable you to provide the prospect with a better or more economical installation.

Air conditioning of the Cowles Chemical Co.'s new building in Skaneateles Falls, N. Y., offers an excellent example of what can be done along these lines. Comfortable conditions are maintained all year around for the firm's office and laboratory personnel, yet the cost of operating the system that provides this comfort is an almost insignificant expense factor.

Credit for the maximum utilization of the plant's manufacturing processes which has made it possible to provide year-round air conditioning at virtually no cost beyond that of the original equipment is due Cowles' own plant engineering department, where the system actually was designed.

In one of the company's operations, water from a deep well is used for process cooling. In analyzing the situation, plant engineers discovered that this water could be utilized in summer for comfort cooling before being used in the industrial process. For winter heating, it was determined that this same water could be used after it has passed through the process, where it absorbs sufficient heat to provide the required degree of cold weather comfort.

The process involved is the major step in the production of "Drymet", trade name for Cowles' anhydrous sodium metasilicate cleaning compound. This product is produced in specially designed furnaces, parts of which require cooling during the high temperature fusing operation.

Water for this purpose is supplied at 50 F from a deep well. During the cooling season, this well water is first circulated through the various air handling units in the conditioned areas, and then supplied to the processing furnaces. It was found that the heat absorbed by the water in the air conditioning system was not enough to interfere in any way with the manufacturing operations.

After cooling the processing equipment, the water is discharged from the furnaces at a temperature of

Continued on page 106

# HOW'S YOUR AIR CONDITIONING

I.Q.?



# HOW WOULD YOU SOLVE THESE 7 INDUSTRIAL COOLING PROBLEMS

- 1 / Confining and Eliminating Odors
- 2 / Obtaining Proper Air Balance
- 3 / Selecting Lowest Cost Condenser Cooling System
- 4 / Keeping Humidity Up
- 5 / Providing Peak Capacity Control
- 6 / Providing Low Cost Numidity Control
- 7 / Obtaining Super-Clean Air

by Edward Dowis

# 1 / Confining and Eliminating Odors

Odors are a serious problem when office and manufacturing areas are connected to a common duct system. Present planning almost always provides an entirely separate system for offices for other reasons, in addition to preventing transfer of odors. For instance, hours of occupancy are apt to be quite different from the industrial areas.

Cooling coils sometimes give off very disagreeable odors from materials which they collect from the air passing through them. These odors are least noticeable when the coil can be operated dry, which is not often practical since it acquires moisture when operated below the dew point temperature.

Odor appears to be most objectionable when the coil is operated at a point where water just forms on the coil, but does not drip off. It is moderate when condensate drips freely. Copper coils seem more susceptible to odors than aluminum. Additives to the air stream can effectively conceal coil odors but they should be applied by persons skilled in this field.

# 2 / Obtaining Proper Air Balance

A machine shop, with cafeteria and offices adjacent, had numerous exhaust fans which removed dust and fumes through exhaust hoods over a number of machines and appliances. Replacement air came through windows, special openings through the ceiling, and from offices and cafeteria when doors were open. Offices and cafeteria were air conditioned and shop conditioning was planned.

Because of the exhaust fans, static pressure in the shop was sub-atmospheric, particularly when windows were closed because of weather. This caused serious loss of conditioned air from the high pressure office. This loss was increased because the conditioned areas and cafeteria areas to the low pressure shop area, were pressurized by introduction of outside air for ventilation.

Increasing the number or size of air intake openings would offer only a partial solution. An intake fan, with capacity to replace all air being exhausted, would balance the static pressure but would be unsatisfactory in winter, as it would produce cold drafts.

A ventilating cabinet, with a fan and steam tempering coil, was installed. Thermostatically controlled louvres direct the air through or around the coil so it is received at room temperature or slightly above.

Fig. 1 shows one of many coil, fan, damper arrangements by which ventilators are made up. A manually adjustable volume damper or adjustable fan speed pulley can be used to balance the static pressure in the space at very close to atmospheric. Where there is wide variation in the amount of air being exhausted, the volume damper can be motorized, and controlled by a static pressure regulator.

If the coil in a ventilator is sized only to bring outside air to inside temperature, other heat losses must be compensated for by radiation or other heating methods. If it is desired to heat the entire space with the ventilator, provision must be made for recirculating some of the inside air and the coil sized to handle the entire load, including outside air. Such a ventilator is illustrated by Fig. 2. Temperature control is by means of a thermostatically controlled steam valve.

It is obvious that a unit such as illustrated by Fig. 2, with the addition of a cooling coil and condensate drain or substitution of a suitably drained, wet heating-cooling coil for the steam coil, could be used for all-year conditioning. There are a number of heating-cooling units which can serve the double purpose of

all-year conditioning and supplying air to balance static pressure.

Where outside air is brought into an air conditioned space before going through the conditioner, it is important that it be delivered as near to machines with exhaust hoods as practical. It will then be possible for exhaust fans to remove fumes and dust with unconditioned air, conserving conditioned air, which would otherwise be lost.

### 3 / Selecting Lowest Cost Condenser Cooling System

A research laboratory required 40 tons of air conditioning and secured bids for several package and central systems, including the usual evaporative and air cooled condensers, cooling towers, and conventional water cooled condensers discharging to the sewer. One contractor was more thorough in his survey and discovered that the prospect already was operating a water cooling system, consisting of a spray pond, pumps and piping, to provide cool water for various laboratory processes.

It was ascertained that temperature of the water never exceeded that suitable for condenser cooling, and also that mineral content was not too high for this purpose. Pumps had ample capacity and maintained sufficient pressure to force water through the condenser under control of the usual pressure operated water valve. A water cooled air conditioning system, connected to this spray pond, was the job purchased.

A machine shop job was sold because the proposal included sprays, utilizing condenser discharge water,

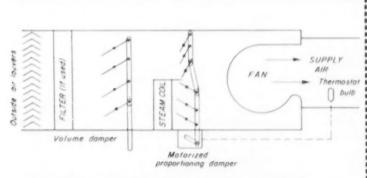
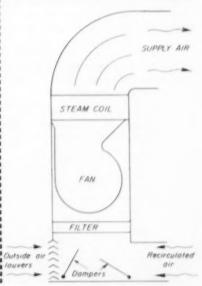


FIG. 1 (above)—Tempered air ventilator, showing one of many coil-fan-damper arrangements by which such ventilators are made up. Yolume damper also can be motorized if desired, and controlled by a static pressure regulator.

FIG. 2 (right)— Ventilator usable also for heating, with prevision for recirculating some of the inside air. Temperature is controlled by means of a thermostatic steam valve.



#### HOW'S YOUR AIR CONDITIONING 1.Q .?

to wet the roof and thus greatly reduce the load. A careful study of the water flow system of any industrial plant is apt to reveal one or more ways to economically dispose of heat of condensation and reduce installation and operating costs of air conditioning.

# 4 / Keeping Humidity Up

A fabric manufacturer required 65% humidity for a laboratory. A tolerance of not more than 2% was permissable. This could be held, during the cooling cycle, by a by-pass damper or reheat coil described in problem 6. To add moisture during the heating cycle, a steam jet, located just below the supply grille and controlled by a humidistat, was able to hold the required humidity to within the required limits.

# 5 / Providing Peak Capacity Control

A chemical plant presented a problem common to many industrial system. Temperature requirements were critical in several departments. The load was extremely variable, The several areas were served by conditioners with chilled water coils and modulating thermostats. At light load, a single compressor serving the water chiller would short cycle. As the load increased, it became difficult for it to maintain the desired temperature.

The solution was to install two compressors and motors, each with a 50% capacity adjustment. One was rated at 50 tons, and the other at 30. With these two compressors, it was possible to operate at eight different capacities, from 15 tons to 80 tons as indicated in Table 1. The capacity steps will be uniform if the larger compressor is selected to handle 60% of the total load and the smaller one 40%.

TABLE 1—Capacities available with two compressors, one 50-ton and one 30-ton, each with 50% adjustment.

50-ton compressor adjustment	30-ton compressor adjustment	TOTAL CAPACITY (TONS)	
100%	100%	80	
100%	50%	65	
50%	100%	55	
100%	OFF	50	
50%	50%	40	
OFF	100%	30	
50%	OFF	25	
OFF	50%	15	

# 6 / Providing Low Cost Humidity Control

A machine tool company had installed air conditioning to provide constant temperature for boring operations requiring tolerances as close as 1/10,000 of an inch. It was desired to reduce humidity which caused rust to form on finished steel.

A water reheat coil was installed, following the cooling coil. It was connected to receive warm discharge water from the condenser through a three-way motorized valve as shown in Fig. 3. The motorized valve is under control of a humidistat set at 40%. When humidity rises above this setting, condenser

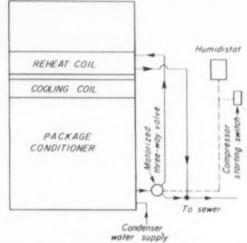


FIG. 3 — Humidity control using condenser water.

water is directed through the reheat coil and thence to the sewer until humidity is reduced, after which the condenser discharges directly to the sewer.

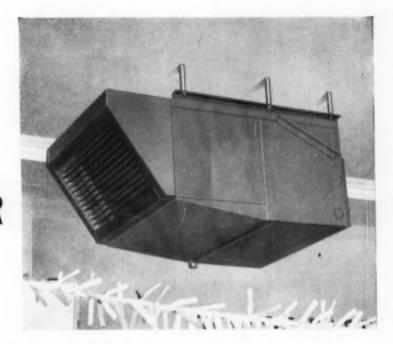
A switch, also under control of the humidistat, overrides the system thermostat and keeps the compressor running when dehumidifying is required. The reheat coil prevents temperature from falling too low while the cooling coil is dehumidifying.

# 7 / Obtaining Super-Clean Air

An aviation manufacturer required maximum cleanliness in an area devoted to final assembly of precision instruments. Instead of relying upon a single cleaning method, the mixture of return and outside air goes through four cleaning stages. It first passes through a bank of cleanable filters, then to an electrostatic air cleaner, followed by a bank of fiber glass throw-away filters, and finally an air washer.

The air washer has controllable spray temperature and dehumidifies the air while washing down containments which pass through other cleaning devices. Laboratory tests indicate that this system gives almost perfect air cleanliness. The working areas are kept free of airborne dust picked up in the room by distribution at low velocity. New adaptable air conditioner

# BUILDS SALES FOR DEALERS



# Only Worthington's FLEXI-COOL fits anywhere

**FLEXI-COOL'S** exclusive sectional construction is ringing up big air conditioning profits for scores of Worthington dealers. Here are just a few of the many comments received:

Elliot-Lewis, Phila., Pa.—"We sold a FLEXI-COOL to an automotive store owner who said, 'If you can hang it from the ceiling, I'll buy it.' "

Haried Co., E. Aurora, III.—"Our job was to air condition a smart restaurant without disturbing the layout or decor. FLEXI-COOL was the only air conditioner that could do the job."

Refrigeration of North Jersey, Dover, N. J.—"We made five sales recently. In every case, FLEXI-COOL'S sectional construction was the deciding factor."

Modern Heating & Plumbing, St. Louis, Mo.—"A local department store wanted a unit that could be installed in extremely small space, not interfere with traffic, yet function with maximum efficiency. FLEXI-COOL was the only answer—and they bought it."

Take advantage of these top selling features:

 FLEXI-COOL can be installed as a package or with blower, filter and coil remote from condensing unit.

- · Horizontal installation on ceilings.
- Vertical installation in almost any out-of-the-way floor space, closet or basement.
- · Choice of air or water-cooled system.
- · Five Year Warranty on refrigeration cycle.
- · FLEXI-COOL saves you inventory space.

Cash in on the big sales that FLEXI-COOL offers a few exclusive Worthington franchise opportunities are still available! For complete information, send coupon today!

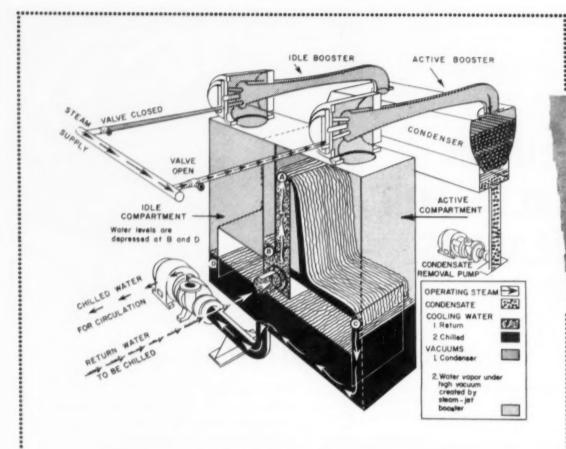
WORTHINGT	ON CORPORATION	
Air Conditionir	ng & Refrigeration Div.	, Harrison, N. J.
Please send me COOL line.	complete information	on the FLEXI-
	I am I am not i usive Worthington francirea.	
Store		
Name		
Address		
City	(please print)	State

# WORTHINGTON



CLIMATE ENGINEERS TO BUSINESS, INDUSTRY AND THE HOME

Circle No. 58 on Reader Service Card



Steam-Jet Coolers - How They Work .....

S TEAM-jet coolers can prove advantageous for any industrial plant or other property if such plant or property has a supply of steam available and if its refrigeration requirements fall within the range of this type of refrigeration equipment.

In the steam-jet system, as illustrated by the Ingersoli-Rand multi-booster unit with surface condenser shown here, water is the only refrigerating medium. It is cooled by direct evaporation in a high vacuum created by steam-jet booster ejectors. Thus a small portion of the water is evaporated, giving sufficient cooling effect to chill the remainder.

Steam-jet coolers can prove practical in any application where steam is available and where any one or more of the following conditions pertain:

Chilled water temperatures of 35 F and higher are required; continuous operation is required for services in which the supply of chilled water must not be interrupted; first costs, operating costs, and maintenance costs must be kept low; safety is a paramount consideration; noise and vibration must be avoided; overload capacity is desirable; economy at part load is needed; the installation does not warrant the services of a licensed refrigeration operating engineer.

The steam-jet cooler shown in the schematic diagram employs a compartment type evaporator. It has two boosters. each of which can be put into or taken out of service by manipulating a small steam valve.

In the diagram, the active booster is in normal operation, maintaining a high vacuum in its compartment and causing the chilled water to spill over the weir at A. The steam valve to the other booster is shut off so that the vacuum in the idle compartment of the evaporator is the same as in the condenser.

The pressure difference between evaporator vacuum and condenser vacuum causes a difference between the water levels A and B and also between C and D. Note that the compartments are separated only by this water column which automatically adjusts itself when a booster is shut off and prevents short circuiting of the condenser vapor back to the active evaporator compartment.

The difference in pressure between evaporator and condenser automatically shuts off flow of return water to the idle compartment and thus prevents heat pickup from the condenser. Without this feature the suction of each booster would require a large isolating valve or some other means to prevent heating of the water by short circuiting or return flow of vapors from the condenser to the evaporator through the non-operating bouster. Substantial savings can be effected for operators of industrial air conditioning systems where it is possible to ....

# Use Waste Steam For Cooling

TOTAL fuel savings of approximately \$5000 per year are expected to be realized by Norton Co., Worcester, Mass., when this manufacturer of abrasives completes installation of the new steam-jet air conditioning system designed to provide summer cooling for several of its plant buildings.

This installation, decided upon only after intensive study by Norton engineers, offers further testi-

INSPECTING the steam-jet cooling unit upon its arrival on a railroad flatcar are a couple of Norton Co. plant engineers.

mony to the fact that steam-jet air conditioning offers certain distinct advantages in applications where the basic requisites for such a system can be found.

The primary factor is usually, of course, the availability of by-product steam which—in this case—is a low pressure "left-over" from a high pressure turbine. The company installed the turbine sometime ago to operate an electric generator.

Although the company is already using approximately 1000 tons of air conditioning in some of its buildings, produced by conventional units with reciprocating compressors, the availability of the surplus steam suggested its use for an extension of the cooling facilities.

While this will involve more ponderous equipment than many air conditioning contractors may be prepared to handle, its principles may also be found in units as small as 20 hp and operable with steam pressure as low as 2 psi.

Included in the area served by the existing air conditioning at Norton is its "Resinoid" building where abrasives are mixed and molded into organically bonded grinding wheels. Cooling and dehumidification are especially important in this area because the compounds used are highly susceptible to humidity at this stage, and moisture content of the air must be kept below 60 grains per pound of air. To accomplish that, the air passing through the coolers is first chilled to 56 F, speeding condensation, with reheaters used to restore it to a comfort level.

The Ingersoll-Rand steam-jet equipment will serve all of Building No. 6, probably all of No. 7, and part of No. 3. It will consist primarily of a threebooster unit with a surface-type condenser.

Each booster, of 50-hp size, will raise the lowpressure steam to a velocity of 3500 to 4250 feet per second. The boosters discharge into a condenser tank,

Continued on page 119

# THE FUTURE FOR FACTORY AIR CONDITIONING

This table is a compilation of replies by leading consulting engineers and architects in major cities throughout the country to the question: "What proportion of U.S. factories (both new plants and existing facilities) do you estimate will be air conditioned for comfort by 1960? 1970? 1980?"

	19	60	197	70	19	80 .	
	NEW	OLD	NEW	OLD	NEW	OLD	
DALLAS	75%	50%	90%	90%	Above 95%	6 in both	
ноизтои		-75% oth types		entfacilities 170 to be c	not abandoned by onditioned		
DETROIT	7%	3%	21 %	9%	60%	30%	
ST.LOUIS	No Est	mate	25%	10%	70%	20%	
CLEVELAND				15% sturing precis		25% al equipment	
NEWORLEANS	50%	Close to 50%	75%	75%	100%	100%	
ATLANTA	40%	10 %	80%	50%	95%	80%	
SAN FRANCISCO	3%	6%	12%	20%	25%	30 %	
CHICAGO		3% → 90% of th	15 lose figures i		,	5%	

# FACTORY COOLING .

# New "Industrial Revolution"

A new kind of industrial revolution is marching across the country.

A nationwide survey just completed by the Trane Co. notes a definite trend toward air conditioning of U. S. factories for employee comfort and efficiency, as distinguished from air conditioning for climatic control, necessary for many industrial processes.

In the survey, leading architects and consulting engineers were interviewed by a cross-section of the company's 90 sales offices across the nation. The survey was conducted at the request of D. C. Minard, president of Trane.

Noting that contract awards for U. S. industrial construction in the first half of this year were up 29% over corresponding figures for 1955, Minard said:

"Leading architects and engineers tell us that industrial air conditioning for employee comfort is developing faster than anyone thought it would. It seems fair to say that the economy of the country is entering a new kind of expansion. This is a stage of building not only for increased capacity, but for modern industrial environment which will cut production costs."

"Factory air conditioning increasingly is being accepted by practical businessmen who insist on getting their money's worth from any investment. "They realize there is sound financial return in reduction in absenteeism, improvement in production efficiency, and by reduction in rejected material.

"While the spread of factory air conditioning is helped by good economic conditions, the trend wouldn't necessarily slacken in the event of a business slowdown. Manufacturers then install as many cost-saving devices as possible in order to keep their products profitable even at highly competitive prices."

#### Consultants Recommend Cooling

In many instances, it was found, consulting engineers are recommending that new factory buildings be constructed with air conditioning or built to allow easy installation of air conditioning in the future.

The trend toward factory air conditioning is particularly noticeable in the South, where some consulting engineers have estimated that as many as 75% of new factories—and 50% of all factories—will be air-conditioned for employee comfort by 1960, and that 90 to 100% of factories will be so equipped by 1970

But the trend is spreading also to the North—particularly in factories involving high skills, such as the electronics industry.

Factors in the trend include competition in industry for skilled help, the desire to maintain employee efficiency in hot weather and pressure from labor unions.

#### Textile Plants Pace New Trend

The following Trane offices queried architects and consulting engineers in their areas: Atlanta, Baltimore, Los Angeles, St. Louis, Washington, Philadelphia, Memphis, Dallas, Houston, Cleveland, Boston, New York, Milwaukee, Chicago, Pittsburgh, Detroit, New Orleans, San Francisco and Greensboro, N.C.

One of the industries in which the trend is at its fastest is the textile industry. Consultants in this field estimate that 20% of floor space is air-conditioned with refrigeration today as against 1% 10 years ago. This is exclusive of spaces using evaporative cooling, and total floor space includes such areas as warehouses as well as production space.

The Trane office at Greensboro reported that almost complete air conditioning of textile and tobacco manufacturing areas will be finished by major manufacturers by 1970 and by smaller firms probably by 1980. Very little new construction in either industry will go up by 1960 which is not fully air-conditioned, it is reported.

Although textile and tobacco factory air conditioning often can be justified from a production standpoint (i.e., a maintenance of certain humidities for proper

Continued on page 114

# "... More than Interesting"

Here are "straws" that show which way the factory air conditioning "wind" is blowing

Excerpts from a talk by John E. Haines, vice president of Minneapolis-Honeywell Regulator Co., at a recent editorial conference on air conditioning:

THERE is very little sound scientific data to prove the percentage increase in office and factory workers' efficiency and productivity, or the speed of recovery of hospital patients, or the improvement in the learning of students through the use of air conditioning, but here are a few examples which are more than interesting:

Detroit Edison Co. made an efficiency study in its drafting room a few years ago. Without air conditioning 8,988 work units required 5,008 man-hours. Following the installation of air conditioning 10,474 work units required only 3,872 man-hours, indicating an increase in efficiency of 51%.

John Hardy & Son, manufacturers of nylon hoisery at Pulaski, Tenn., reported a 29% increase in production after installing air conditioning. The knitting machines required less maintenance and maintenance costs dropped 80%.

A survey of 75 manufacturing plants in the New York City area indicated that 100 days in each year are so hot or humid that employees either slow down or stop work entirely during part or all of the day and that an average of \$103 in wages is lost each year for each employee working in a non-air conditioned building. Plant absenteeism dropped 25 to 30% after the installation of air conditioning, turnover in personnel was reduced, cleaning costs were lower and productivity increased.

The Aluminum Co. of Canada reported a sharp drop in absenteeism and rate of turnover among employees after air conditioned rooms were used where the employees could rest at regular intervals.

The Elgin National Watch Co. reported that its rework decreased 25% after it added air conditioning and that employee efficiency increased.

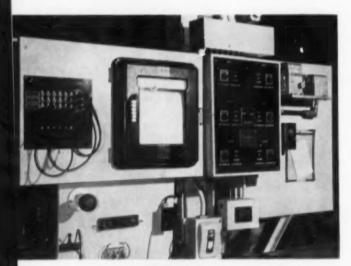
The greatest and almost unexplored potential for air conditioning is in the industrial plant, where the ratio of square footage in use as compared to office buildings is about 50 to 1.

It is probable that less than 1% of all of our modern factories are air conditioned. Yet, we are living in a modern competitive system, and the factors of competition operate in a factory just as they do in the office building, hotel or shopping center.

It is inevitable that a very large percentage of the modern production facilities in this country will be air conditioned within the next few years. 100 TONS of cooling is provided by the two 50-ton self-contained air conditioning units mounted in each of these penthouses on the roof of the new Ebco factory. Each penthouse serves a separate 100-ton cooling zone within the plant area.



# Just how big 15 a "PACKAGE" Installation?



CENTRAL CONTROL panel provides full control of the six independent air conditioning systems in the plant, and supplies operating data on each. Information instantly available includes outside temperature and humidity, supply air conditions from each conditioning unit, and conditions existing within each separate sone.

EVER install a 640-ton industrial air conditioning system? Possibly not. But wouldn't installations of this size be more feasible for many contractors if they could be handled entirely by using a combination of factory-assembled "package" units, with no single unit exceeding 50 tons in capacity?

That's exactly what was done in the case of the modern new factory occupied by Ebco Mfg. Co., a Columbus, Ohio, manufacturer of electric water coolers. Believed to be the largest single installation of self-contained, central station type, "package" units ever devised, this unique air conditioning system provides all-year comfort for the one-story 240,000 sq. ft. structure.

Virtually windowless, the building was designed with the inclusion of year-round air conditioning as a prime consideration. As a solution to the problem of cooling the immense plant, Ebco's engineering staff selected a zoned plan in which the refrigeration equipment would be housed in six giant penthouses constructed on the roof. Each penthouse was to contain an individually operating 100-ton air conditioning system serving a separate section of the building.

Two possible selections of equipment were considered for this purpose—the remote built-up type, and the factory-assembled central station "package" unit.

The built-up system under consideration called for installation of a 100-ton compressor in each pent-

house, with a separate air handling unit and direct expansion cooling coil. Adjacent to each penthouse, a separate evaporative condenser would be installed. For heating, a steam coil would be provided in each air handling unit, with steam furnished from two 300-hp boilers which also would serve certain manufacturing processes. After considerable study, however, it was determined that this system incorporated a number of disadvantages which could be eliminated by the selection of factory-assembled, central station units.

First of these disadvantages was expense, including initial cost of equipment, as well as installation, operation and maintenance costs. The built-up system would require extensive refrigerant lines to air handling units and evaporative condensers, as well as steam pipes and condensate return lines to and from the boilers. It also would necessitate the permanent employment of both a state-licensed refrigeration engineer and a state-licensed fireman, with estimated combined wages of \$12,000 per year.

Furthermore, pump-down of the refrigerant would be required during the cold weather months, leaving the units available only for heating. This would limit the flexibility of the system to meet cooling requirements in certain areas of the building in case of unseasonable weather.

After extensive consultation with Donald Delp, Columbus manufacturer's representative of United States Air Conditioning Corp., Ebco management and engineers recognized distinct advantages and economies in the type of equipment recommended by Delp.

The Usairco "RK" units specified contain, in a single casing, all the elements of a central air conditioning plant, including evaporative condenser. This feature was an absolute necessity in light of the water savings it would effect. Furthermore, they are factory-assembled and tested so that installation was accomplished on the job with only three connections—to power, ducts, and water supply and drain. Each unit was elevated to its position on the roof in one piece, thus eliminating further on-site labor costs.

Two of these 50-ton central station "package" units occupy each 25 x 35' penthouse, which also contains a 1,70,000-Btu/hr, direct-fired (gas with oil-fired auxiliary) heating unit with stainless steel heat exchanger.

The blowers in the air conditioning units provide all ventilation within the plant, as well as circulation of cool and warm conditioned air as required. Ventilation is selected manually, while cooling-heating change-over is automatic. Both cooling and heating are available at all times.

This system requires only the attendance of a night watchman, so that no additional expense is involved for special personnel. The control system is so designed that the watchman can make any adjustments that may be required during non-working hours.

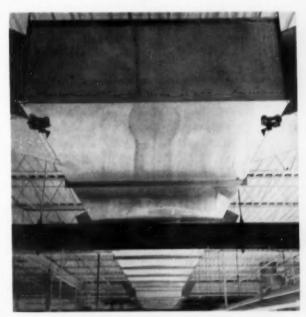
Each roof penthouse serves a separate zone of the plant. The six independent systems are controlled from a central control board where all pertinent data is available. Information on outside temperature and humidity, supply air leaving the conditioners, and individual zone conditions can be readly obtained from a recording thermometer installed in the maintenance department.

Supply air ducts deliver conditioned air to the nearby zone, where it is discharged directly from the ducts at relatively high velocity over a radius of 75 feet. Ceilings 22' high permit this system to function without creation of drafts at the working level.

Each penthouse supplies 40,000 cfm of conditioned air, with 25 percent fresh air introduced in both heating and cooling, and 100 percent fresh air available by manual control. Return air is taken through dampers in the ceiling directly below each penthouse.

The Ebco plant is laid out to provide for ready expansion to meet future needs. The air conditioning system, with its unitary central plants, can be adapted to meet increased cooling requirements by the simple addition of identical penthouse arrangements to serve newly-created zones.

Recognizing the desirability of air conditioning,



MAIN SUPPLY DUCT for the factory is suspended from the 22' ceiling. Each outlet distributes conditioned air over a radius of 75'.



Ebco engineers had early considered the windowless construction which cooling would make possible. They established that construction and other initial savings realized by eliminating windows would offset the first cost of air conditioning equipment. Subsequent maintenance and other savings are expected to exceed the operating costs of the cooling system, providing a net overall saving for the combination of air conditioning and windowless construction.

Economies involved in the elimination of windows were broken down into six categories:

- (1) Construction—windows more costly than conventional wall construction;
- (2) Maintenance—no breakage, cleaning, puttying, etc.;
- Space utilization—fuller use of interior space possible without windows;
  - (4) Shades—no shading of windows required;
- No distractions to employees from nearby airport and other outdoor attention-getters;
- (6) Heat load—15 percent reduction without windows.

A completely separate air conditioning system with a number of unusual features serves the main office area. Automatically controlled, it employs a 30-ton central station package located in a mezzanine equipment room.

The office utilizes a luminous ceiling which not only provides glareless and shadowless lighting at the unusually high intensity of 70 foot-candles but also serves as a plenum for supply air. This ceiling consists of corrugated, translucent plastic sheeting which rests on extruded aluminum tracks, suspended from the regular ceiling. Sufficient fluorescnt strips provide the lighting level desired and are attached to the regular ceiling.

The 4 to 7' high enclosure formed by the two ceilings and the four walls serves as the plenum. Under the slightly higher pressure which prevails within this space, the conditioned air is forced through the many openings between the corrugations in the plastic ceiling and the tracks on which it rests. The large number of such openings and their uniform spacing throughout the ceiling provide uniform air distribution throughout the office below.

Return air is taken through floor registers adjacent to the exterior walls into a subterranean concrete duct which leads it to a point below the air conditioning unit. From this point, a concrete shaft delivers it to the return air dampers at the unit. Heat loss in the return air duct during the winter tends to keep the floor of the building warmer than it normally would be, since it is located directly on a concrete slab.

Another package unit, with 10 tons of capacity, provides cooling for the spacious building lobby. This unit is automatically controlled. A separate 7½-ton upright packaged air conditioner is used to cool the conference room.



With this new, sectional design Niagara condenser you avoid the many troubles due to faulty condensing and get at all times the full capacity your refrigerating plant should afford.

and better, trouble-free service

You benefit from extra saving in upkeep labor and expense. The casing of this new condenser is made of sections each separately removable, giving you access to all parts for easy inspection to head off dirt and corrosion, to clean the coils easily from either side.

You benefit from greater efficiency in condensing. A simpler method of using evaporative cooling improves heat transfer. You benefit from Niagara features that remove super-heat before condensing and keep the system purged of oil. You save 95% of the cooling water cost.

You benefit from a low first cost, lower freight cost and less expense in erection.

Capacity range is from 90 to 240 tons. Write for Niagara Bulletin 131. Find out how your plant can save expense this season.

# NIAGARA BLOWER COMPANY

Dopt. CR. 435 Lexington Avenue NEW YORK 17, N. Y.

District Engineers in Principal Cities





Over 40 Years' Service in Industrial Air Engineering

Circle No. 59 on Reader Service Card & AIR CONDITIONING . SEPTEMBER, 1956





# **Plastic Coating Stops Costly Condensation Drip and Rust**

THE COSTLY PROBLEM caused by dripping from this sweating pipe was permanently solved with one easy and inexpensive application of NoDrip Plastic Coating. Sweating pipes, ceilings, air ducts and other metal equipment are also completely protected against rust and corrosion by low cost NoDrip.

NoDrip Plastic Coating acts immediately to insulate and protect. One application adds many years of service life to metal equipment. NoDrip is also resistant to acid, alkali and brine...protects concrete, brick, plaster, tile wood or composition surfaces.

Easy application requires no special equipment or skill. Anyone can apply NoDrip with brush, trowel or spray. Stop your condensation prob-

lem now! Get	full details without delay.
	COMPANY  32-PAGE NoDrip DATA HANDBOOK Complete with photographs, charts and tech
	Available at loading refrigeration supply houses  ITELL Co., 553-1. Burch 51., Kankakee, III.
Please send	my FREE copy of the NoDrip Data Handbook.
Сотралу	Title
City	ZoneState

THOUSANDS MORE BABY CHICKS like these will be hatched at the Allison Hatchery, thanks to the constant control of temperature and humidity provided by year-round air conditioning.

CHECKING UP on one of the two 5-hp air-to-air heat pumps installed is owner Curtis Allison. He expects these units to pay for themselves by increasing efficiency and reducing chick losses.





This chick hatchery installation points up the fact that when it comes to new uses, HEAT PUMPS are . . .

# Just Scratching the Surface

"Successful hatchery operation calls for constant 'springtime conditions'.

By economically providing such conditions, these heat pumps should raise our annual income by about \$11,000 through cutting operation costs and boosting production."

TRAYING EGGS before putting them into the incubator is a delicate operation. Air conditioning will cut down on damage to eggs at this stage, particularly during hot summer months.



TEMPERATURE AND HUMIDITY must be closely controlled to 99 F and 86% in this big incubator where thousands of eggs are being hatched. The air conditioned room makes this job easier.



OWN in the small Alabama community of Bridgeport, Curtis Allison is doing a bit of pioneering in the chicken hatchery business—and in so doing he is offering further testimony to the fact that heat pumps can be profitably applied to a wide variety of commercial enterprises.

Allison Hatchery, which ships out 75,000 baby chicks a week, is believed to be the first hatchery in the nation to install electric heat pumps for year-round air conditioning.

In this installation, two 5-hp air-to-air machines do a double job of summer cooling and winter heating.

Allison has some mighty good reasons for poineering the use of heat pumps in the hatchery business. He had been considering a combination of resistance electric heat and conventional electric air conditioning, but after considering the problem carefully from every angle he decided on heat pumps instead. Here are the reasons why:

(1) Heat pumps he figures, will cut his heating costs in half (or perhaps even more), compared with resistance electric heat. By using the heat that the outside air contains, the heat pump drastically reduces the amount of electricity needed to provide heat. This means less wiring, too, since Allison will be using just two 5-hp machines instead of an estimated 60 kilowatts of resistance electric heat. With the heat pumps, Allison uses smaller wire and a 200-ampere switch box instead of a 400-ampere box that would be needed for the 60 kw of resistance heat.

(2) For summer air conditioning the heat pumps use just as much electricity as a regular air condition-

ing system, but because these heat pumps are of the air-to-air type Allison eliminates the need for a cooling tower and pumps—and he also eliminates a size-able water bill (about 90,000 gallons of water a year).

(3) Heat pumps switch automatically from heat to cool, and vice versa. Conventional electric heating and air conditioning systems normally require hand switching from one system to the other, and drainage of water in the system with the advent of freezing weather. But the heat pumps keep the temperature at the desired level every day of the year, completely automatically, a particularly important advantage in the "in-between" weather of spring and fall, when there's need for heating at night but cooling in daytime.

(4) Heat pumps supply fresh air constantly, and this air is filtered and conditioned before being delivered. While electric air conditioning also does this job, conventional electric heating normally does not take in fresh air, nor does it filter the air. So with the heat pump, Allison's hatchery gets fresh air input, plus air filtering and cleaning, every day of the year, not just in summer.

So Allison expects the heat pumps will save a lot of money on his electric bill, costing about 40% less to operate than the combination of resistance electric heat and conventional electric air conditioning. At a normal cost of 2 cents per kilowatt-hour, this savings would amount to some \$700 a year. However, since his hatchery is served by North Alabama Electric Cooperative, a distributor of TVA electric power, his average cost is only about a penny per kilowatt-hour.

Continued on page 104



complete lines of year-'round air conditioning equipment
Need literature?

drayer-hanson

3301 Medford Street • Los Angeles 63, California
(Division of National-U.S. Radiator Corporation)

Circle No. 61 on Reader Service Card

# USEFUL LITERATURE On Air Conditioning

To obtain the information described below, simply circle on the postcard in this issue the key numbers of the items you wish to receive. We will forward your requests to the companies concerned.

AIR CONDITIONING and refrigeration lubricating tips are offered in a "capsule course" published by Sun Oil Co, in its two-part Technical Bulletin No. 43. Part 1 tells what to look for in refrigeration oil and how to determine oil needs of a refrigeration compressor. Part 2 is an up-to-date illustrated article explaining refrigeration principles and describing modern air conditioning and refrigeration equipment.

Circle No. 120 on Reader Service Card

COMPLETE LINE of heating and cooling equipment, including duct, pipe and fittings, is covered in streamlined 142-page catalog by Williamson Co. Contains true-color photographs, cross-esctional and cutaway drawings, and performance and capacity charts for every heating and cooling unit available. Indexed and cross-referenced, component parts and optional equipment also are pictured and described in detail.

Circle No. 121 on Reader Service Card

DIMENSIONS AND SPECIFICATIONS for 2 and 3-ton aircooled air conditioners designed for use with Hi-Boy and Lo-Boy counterflow and suspended furnaces are listed in catalog sheet produced by Dornback Furnace & Foundry Co. Furnace and cooling data also is supplied.

Circle No. 122 on Reader Service Card

LOOSE-LEAF PLANNING and preparation of sales presentations are discussed in a 24-page "Idea Booklet" published by Elbe File & Binder Co. Included are handy binder selector guide showing ring, post, prong, spring, flexible, and metal types of constructions. Helpful charts dealing with hole punching and spacing, correct use of type page, and selection of paper grades and weights also are provided.

Circle No. 123 on Reader Service Card

COOLING TOWERS are reviewed in Baltimore Aircoil Co.'s 12-page Bulletin No. 202 on its new "M" heavy duty equipment line. Catalog, in color, covers complete line of 23 sizes, from 10 to 400 tons, for air conditioning and refrigeration. Construction and components of units are illustrated and described in detail. Selection charts also are offered.

Circle No. 124 on Reader Service Card

ALTERNATING CURRENT METERS and accessories are described in Catalog AC 587 published by John W. Hobbs Corp. Specifications and dimensional drawing are supplied. Among uses of the meters are the timing of operating cycles of refrigeration equipment and air conditioning units and systems.

Circle No. 125 on Reader Service Card

**RELATIVE HUMIDITY TESTING** equipment is discussed in Tenney Engineering, Inc., folder on TR chamber. Details regarding applications, performance, construction, and specification data also are supplied.

Circle No. 126 on Reader Service Card

SEPTEMBER, 1956 . COMMERCIAL REFRIGERATION

CENTRIFUGAL PUMPS are described in Ingersoll-Rand bulletin, Form 7248-A, which covers redesigned line of DMV-DHV single-stage units. Two-color, 8-page bulletin offers construction features and interchangeability chart along with cross sectional and exploded views of component parts and dimensions. Installational methods also are illustrated.

Circle No. 127 on Reader Service Card

GENERAL SERVICE PUMPS and type AC (for air conditioning) centrifugal pumps are covered in two publications (Bulletins No. 200 and 700) available from Weinman Pump Mfg. Co. Construction features, sectional view with stuffing box, and dimensional data are included in first bulletin. Second gives exploded view of all working parts of AC pump, performance charts, as well as dimensional information.

Circle No. 128 on Reader Service Card

LATEST IMPROVEMENTS, specifications, and complete performance data for Herman Nelson horizontal and vertical unit heaters have been written into 36-page Bulletin No. 700A produced by American Air Filter Co., Inc. Included are complete hot water and steam performance tables, dimensions, selections, applications, descriptions of cabinets, elements, mater mountings, fans and accessories, controls, suggested layouts, and piping diagrams.

Circle No. 129 on Reader Service Card

CONCISE TABULATION of pump types with their rating enables pump users to select correct unit for their needs from Form 7223-B available from Ingersoll-Rand. Cross-section view points-up design features of CRV line. Various models are described and their applications listed, Typical installation views are shown, Performance tables and dimensions also are offered.

Circle No. 130 on Reader Service Card

CONDENSERS FOR BIG JOBS are featured as Kramer Trenton Co. provides bulletin, U210D, which describes its giant, all-season remote-type units. Complete application information, specifications, and rapid selection charts covering all sizes up to 300 tons are supplied.

Circle No. 131 on Reader Service Card

GRAPHICALLY ILLUSTRATED ratings, dimensions, and variety of sizes of MonoBloc centrifugal pumps for air conditioning systems are contained in Worthington Corp. bulletin, W-306-B3D, Cross-sectional drawing of pump shows enlarged view of mechanical seal.

Circle No. 132 on Reader Service Card

CONTROL OF BUILDING TEMPERATURES from outdoors is the topic of illustrated, 4-page Bulletin No. C-256 by Automatic Devices Co. Complete line of outdoor-type automatic heat controls is described in detail with diagrams furnished.

Circle No. 133 on Reader Service Card

DETERMINATION OF PROPER control system for direct radiation is explained in non-technical language, bulletin CA-12 prepared by Barber-Colman Co. Illustrated with charts and graphs, publication includes control of steam and het water and discusses both two-position and proportioning modes of control.

Circle No. 134 on Reader Service Card

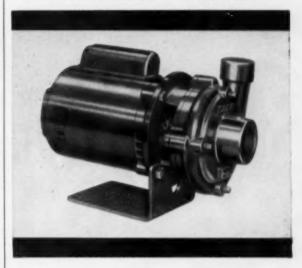
COMPREHENSIVE DESCRIPTION of its fan products is given in attractive, four-page catalog by Frigid, Inc. Complete specifications and dimensions also are supplied.

Circle No. 135 on Reader Service Card

(Turn to page 58 for more Useful Literature)

# **NEW FROM TACO**

SERIES 170 CENTRIFUGAL PUMP FOR AIR CONDITIONING INSTALLATIONS



Experience, research, quality control production . . . standard with Taco in the long-time manufacture of domestic hot water heating circulators . . . are the basic reasons why the new 170 series pumps fully meet the precise requirements for all installations. Note the following features that assure peak performance:

MOTOR — Motors regularly furnished are 3450 R.P.M., 60C, Single Phase, with permanently sealed ball bearings. Motors with other characteristics available.

MECHANICAL SEALS — 2 piece type for easy replacement; self-adjusting, self-lubricating.

IMPELLER — Closed type. Balanced for smooth, noiseless, efficient operation.

VOLUTE — Fine-grained cast iron with brass wearing ring. Designed for four position discharge.

MOUNTING — Heavy stamped steel base — yet flexible enough to permit slightly out of line connections without damage to pump or noisy operation.

LUBRICATION - None required.

The Taco 170 series is light in weight, low in cost, extremely compact, available in several sizes . . . it's the pump that perfoms best.

Call or write today for complete information.

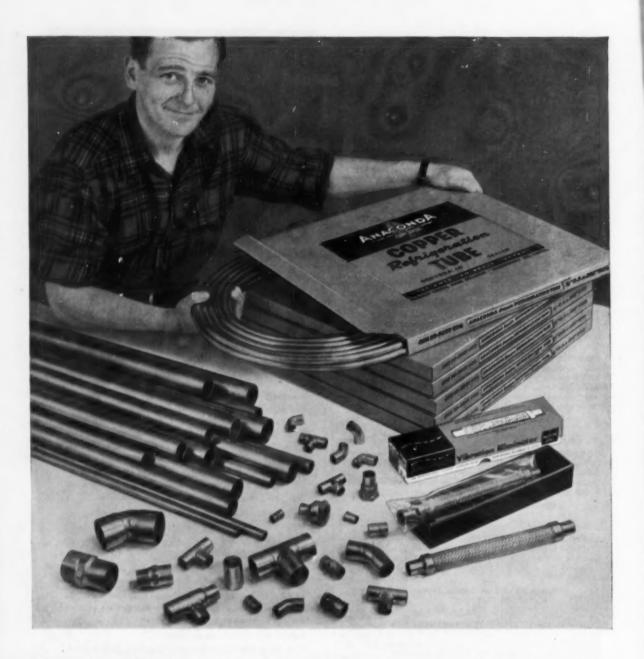
SETTES HEATING

### TACO HEATERS, INCORPORATED

1160 Cranston Street, Cranston 9, R. I.

Name		
Address		

Circle No. 62 on Reader Service Card



# Here's why it pays to ask for Anaconda by name

- 1. Anaconda Refrigeration Tube is 99.9% pure copper, phosphorus deoxidized—clean—dry—made to meet A.S.T.M. Specification B280-55T. It stands up in service.
- 2. Anaconda Refrigeration Tube is consistently uniform in gage, size, temper—easy to work with.
- Anaconda Fittings, Vibration Eliminators, and Tube are built to match—for fast, easy installation.

4. All these extra values are yours—just by asking for Anaconda by name.

See your Anaconda Distributor, The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

ANACONDA

REFRIGERATION PRODUCTS

# WHAM'S NEW

# in Air Conditioning Equipment

For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your request will be forwarded directly to the companies concerned.

(For more New Products turn to page 60)

#### Portable Air Conditioner

Product: "Dockside" 3/4-ton portable air conditioner.

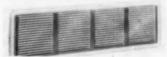
Manufacturer: Synco Co., Detroit, Mich.

Features: Company claims this unit is first truly portable air conditioner yet developed. Capacity is <sup>3</sup>/<sub>4</sub> ton, with hermetically sealed refrigerating system. Unit has "plug-in" feature that simplifies installation, requires no permanent plumbing or attachments. Rugged construction makes unit especially adaptable for flexible, "temporary" industrial use, company says. Brochure giving complete details is available from the manufacturer.

Circle No. 66 on Reader Service Card

Return Air Grille

**Product:** Air conditioning return air grilles, 21-H for sidewall installations and 23-H for baseboard applications.



Manufacturer: Air Control

Products, Inc., Coopersville, Mich.

Features: Differ from standard models in that their fins run horizontally. Arrangement makes it impossible for room occupants to see into ducts and permits more finished appearance on certain sidewall and baseboard installations. Finished in two-tone beige. Available in two sizes, 24 x 6" and 30 x 6".

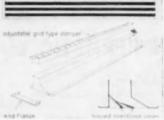
Circle No. 171 on Reader Service Card

Adjustable Diffuser

**Product:** Models KSL-1 and KSL-2 slotted air diffusers with adjustable grid-type damper.

Manufacturer: Connor Engineering Corp., Danbury, Conn.
Features: Damper regulates air

Features: Damper regulates air volume evenly over entire diffuser length and hinged extruded aluminum vanes can be positioned for any angle of air discharge. KSL-1 is for single air stream discharge in 3½ and 6" widths, and KSL-2 for multidirectional discharge and greater



capacity in 12" width. Both models are made in 2, 3, 4, and 6' models. By omitting end flanges at each joint several may be installed end to end to form continuous diffuser line in wall or ceiling. Capacity is from 50 to 300 cfm per foot of length depending upon model and space to be served.

Circle No. 172 on Reader Service Card

Air Register

Product: Hot-cold air register. Manujacturer: Lynn Corp., Marshall, Mich.



Features: Constructed of heavy gauge steel, it is adaptable to floor, wall, and ceiling mounting. Silver "hammer tone" finish blends with any interior.

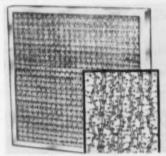
Circle No. 173 on Reader Service Card

Air Filter

**Product:** All-aluminum air filter. **Manufacturer:** George Evans Corp., Moline, Ill.

Features: 1" thick filter will

catch and hold up to 200% more lint and dust without serious resistance to air flow, manufacturer says. Filter pack has larger openings on inlet side — progressing to smaller openings on outlet side. Precisionangled openings force air into extremely high turbulence and cause it to travel 3.5 times filter depth from



inlet to outlet side. Rough, talonlike edges grip and hold dirt, letting pack absorb great quantities of lint without checking off air stream. Quickly and easily cleaned by flushing with tap water through garden hose. Requires no high tension adhesive oil. Available in all standard

Circle No. 174 on Reader Service Card

Air Duct

**Product:** Aluminum-lined fibre air duct.

Manufacturer: Delta Co., Chicago, Ill.

Features: Body is constructed of plys of long jute fibre kraft. All plys are bonded with waterproof adhesive in addition to which outer ply is asphalt-saturated. Fits all standard metal elbows and tees. May be used for radial and lateral systems. Circle No. 175 on Reader Service Card

**Horizontal Furnace** 

Product: Redesigned line of PAC gas-fired, horizontal furnaces.

Manufacturer: Reznor Mfg. Co., Mercer, Pa.

Features: Interchangeable panels on blower compartment facilitate bringing return air duct in at top, bottom, or either side as at con-



ventional end opening. Always can be installed with access door to controls and burners on most convenient side, because air flow through heater may be in either direction. Compact design permits unit to fit into many tight corners. 75,000 Btu model measures only 22% x 22% x 37½." Side panels are 20" high, same height as connecting ducts. Filters can be changed from outside cabinet with no doors to open or access plates to remove.

Circle No. 176 on Reader Service Card

Heat Interchanger

Product: "SRX" superheaterheat interchangers. Manufacturer: Heat-X, Inc., Brewster, N. Y.

Features: For use on air conditioning and refrigeration systems to insure full utilization of evapora-



tor surface and eliminate problem of having part of surface being used for superheating refrigerant. Combines superheater with heat exchanger. Units sub-cool liquid refrigerant, improve expansion valve operation, and increase efficiency of evaporator due to reduction in amount of flash gas. Available in capacities from 1 through 100 tons. Circle No. 177 on Reader Service Card

Air Filter

**Product:** "Dacor" air filter, for home air conditioners of either window unit or central-system-type.

Manufacturer: Barneby-Cheney Co., Columbus, Ohio.



Features: Removes odors, gases, smog. smoke, pollen, dust, dirt, mold spores, bacteria, and viruses from air. Activated charcoal adsorbs all impurities from air. Since odors are removed, manufacturer claims ventilation is unnecessary therefore reducing load on cooling unit by as much as 30%. Available in sizes to fit virtually every make and model air conditioner.

Circle No. 178 on Reader Service Card

2-Ton Conditioner

**Product:** Model ACR remote 2-ton air conditioner with Model 75-P furnace.



Manufacturer: Sequoia Mfg. Co., San Carlos, Calif.

Features: Coil cabinet dimensions are compact in 2, 3, and 5-ton



MY PERFORMANCE HINGES ON A NUMBER OF FACTORS ... don't jump to conclusions until you

diagnose my particular case. With each service call, it is necessary to analyze a completely new set of circumstances. The real cause of failure or improper operation is sometimes hidden by other factors that must be checked carefully before deciding the remedy. Electrical components such as overloads, relays and capacitors may be checked and replaced in the field. In addition, such things as oil and Freon charge, dirty condensers or improper cabinet seal will affect compressor operation. Line voltages and even such a simple thing as a blown fuse should be investigated. When you locate one possible cause of trouble you must be alert to other reasons for this situation. For instance, if the job is short of Freon, it is not enough to add charge and let it go. You should check for leaks or a break in the system. Only after thorough investigation of all possibilities will you be sure of good servicing. Since many common causes of failure may be corrected in the field, you are doing yourself and your customer a service if you cover all angles before deciding to return the compressor or, treat the effect rather than the cause.



TECUMSEH PRODUCTS
TECUMSEH, MICH.
MARION, OHIO
EXPORT DEPT.:

World's Largest
Producer of
Compressors for the
Refrigeration Industry

P. O. Bex 2280, 24530 Michigan Ave., W. Dearborn, Mich.

Circle No. 64 on Reader Service Card

models. Are additive to all basic type furnaces—upright, counterflow, and horizontal—for economy in common use of blower, filters, and duct work. Operation capacities are 24,000 Btu for 2-ton; 36,000 Btu for 3-ton, and 58,800 Btu for 5-ton model. Hermetically-sealed, twin-fan compressor operates on 230-volt, single-phase current. Overload protection is provided.

Circle No. 179 on Reader Service Card

Cast Iron Boiler

**Product:** Series of oil-fired, cast iron boilers for small and mediumsize residential installations as well as small commercial applications.



Manufacturer: Thatcher Furnace Co., Garwood, N. J.

Features: Has permanently sealed tongue and groove joints, 5-way fire travel, extended fins, and oil burner. Available in 6 units, three each for steam and water. Gross IBR ratings at output range from 97,000 to 168,000 Btu.

Circle No. 180 on Reader Service Card

Registers

**Product:** Registers 20-R and 22-R for sidewall and baseboard application respectively.



Manufacturer: Air Control Products, Inc., Coopersville, Mich. Features: Designed for jobs

Features: Designed for jobs where ducts come down from ceiling. Four-way control is maintained by adjustable vertical front and horizontal back fins, set at a 22½-degree downward deflection. Dampers pivot from bottom, allowing air to enter from above. "Adjusto-Stop"

setting permits easy balancing of damper at register face. Finished in two-tone chamelon beige. Available in four sizes, 8 x 6", 10 x 6", 12 x 6", and 14" x 6".

Circle No. 181 on Reader Service Card

**Package Conditioner** 

**Product:** Compact, air-cooled, package air conditioner (QR-200) for cooling entire home.



Manufacturer: Mitchell Mfg.

Co., Div. of Cory Corp., Chicago, III. Features; Can condition area up to 1000 sq. ft. Requires only single electrical connection. Delivers high capacity performance in temperatures to 120 degrees. Requires only 17" of head room and can be installed in window, through the wall, or in attic, crawl space, or basement. Measures 16½ x 31½ x 16½". Coils are of copper tubing with aluminum fins. Of two-cylinder construction and is hermetically sealed. Sound conditioned for quietest possible operation. Operates on 230-volt, single-phase alternating current and has power factor of 90%.

Circle No. 182 on Reader Service Card

**Ceiling Conditioner** 

**Product:** Remote, ceilingmounted, year-round ("Dual Conditioner") air conditioning system."



Manufacturer: Circle-Air Industries, Brooklyn, N. Y.

Features: Uses same piping circuit now used for heating, to cool. heat, and ventilate. Can be used in fireproof buildings. For oddly shaped areas, extending ducts are used within same area. Smoke, fumes, or flames can not be transmitted from one room or area to another. Blowers supply even air distribution through louvers at extremely low noise levels. All air is filtered through standard Fiberglas filter. System will not be thrown out of balance if one or more of units is turned off, regardless the size of installation.

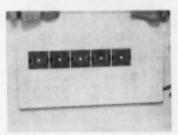
Circle No. 183 on Reader Service Card

Wall Conditioner

Product: Improved 34-ton, builtin wall air conditioner.

Manufacturer: Lewyt Air Conditioner Corp., Long Island City, N.Y.

Features: Measures 15" deep, 145%" high, and 32-7/16" wide. Changes include two motors with overload protector and automatic reset; five adjustable directors to control flow of air and eliminate drafts; allergy-proof aluminum filter that may be cleaned with water and never has to be replaced; six-bladed aluminum condenser fan and slinger ring that assures positive condensate disposal with no dripping; twin double blower scroll for quiet operation



and full capacity of air volume; knockouts on shell to allow either right or left side line cord attachment; and improved condenser coil for increased capacity.

Circle No. 184 on Reader Service Card

**Cooling Tower** 

Product: "Carefree" cooling

Manufacturer: Koch Engineering Co., Wichita, Kan.

Features: Functions without use of electric motors and fans. Air movement and cooling are accomplished by system of nozzles at top of tower. Nozzles spraying down-



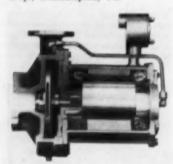
ward, perform two functions: Downward jet of water causes movement of large volume of air through tower; and spray nozzles atomize water into minute particles, permitting better mixing of air and water, helping to provide greatest possible amount of cooling. Wood fillers and baffles are

eliminated. Simple construction keeps accumulation of water chemicals, salts, and dirts at minimum. Circle No. 185 on Reader Service Card

Seal-Less Pump

Product: Seal-less centrifugal refrigerant pump.

Manufacturer: Chempump Corp., Philadelphia, Pa.



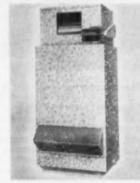
Features: Handles Freon, Isotron, similar fluorinated refrigerants, ammonia, brine, and chilled water with absolutely no leakage or contamination, says manufacturer. Combines pump and motor in single hermetic unit. Pumped fluid enters motor section, provides automatic bearing Jubrication. Corrosion-resist-

ant liner isolates motor windings from pumped fluid. Available in wide choice of construction materials including stainless steel, Monel, Hastelloy B, and Titanium. Heads range to 195' and capacities to 250 gpm. Circle No. 186 on Reader Service Card

Vertical Tower

Product: Series "V" vertical induced draft tower.

Manufacturer: Dover Mfg. Co., Independence, Mo.



Features: Requires minimum amount of floor space. Centrifugal blower, which eliminates usual fan

noise, provides air flow within tower and piping and duct work to tower are kept to minimum. May be used for both interior and exterior installations and, because both air intake and outlet are located on same side of tower, unit may be placed flush against wall. Inside, tower can be located adjacent to compressor eliminating need for additional piping. Has counter-flow design. Water distribution system produces square-solid spray. Has "Z". shaped fill.

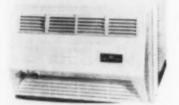
Circle No. 187 on Reader Service Card

Room Conditioner

Product: "Advance Series" of room air conditioners.

Manufacturer: Mitchell Mfg.

Co., Div. of Cory Corp., Chicago, Ill.



Features: Consists of Model Nos. M 157-34 hp, 115 volt; M

# First TRULY PORTABLE Air Conditioner



Meet rugged, powerful, efficient DOCK-SIDE - only truly portable air conditioner made. %-ton capacity and finest capillary system freon gas expansion, mean cool, dry air in minutes! Tamper-

proof, hermetically sealed, and lifetime-lubricated, DOCKSIDE is built to "take" it. And its exclusive, "plug-in" installation needs no permanent plumbing or attachments . . . is ideal for flexible, "temporary" industrial use.

For more comfort, more economy, more production write teday for DOCKSIDE brothure.

# SYNCO COMPANY

United Artists Building . Detroit, Michigan

Circle No. 56 on Reader Service Card

# Apply INSULATION

the MODERN way!

EFFICIENT ...

ECONOMICAL EASY . . .

A permanent bond to metal, masonry or wood for all insulating materials. Timesaving.

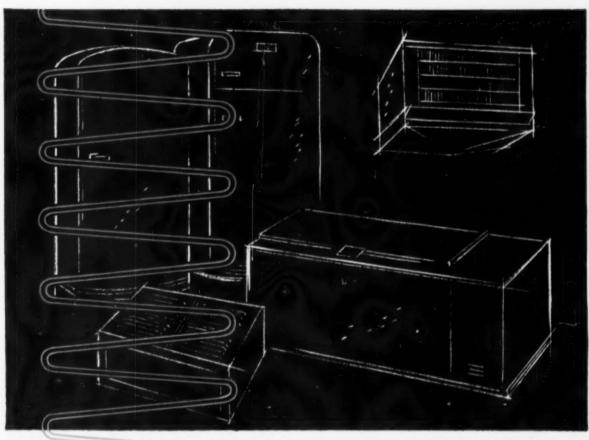


STIC-KLIPS® eliminate necessity of drilling, welding, furring, or puncturing surfaces. Use on Heating, Venti-lating, Air Conditioning processing equipment and ducts. Useful, too, on cold storage, marine, or acoustical installations. Economical,

STIC-KLIPS® are unsurpassed for insulating interior and exterior building walls, constant temperature rooms, boiler and drying rooms, partitions and ceilings.

Especially adaptable and useful on flat, corrugated, curved or irregular surfaces. Easy to apply. Availvariety of types with accessories and adhesives. Write for illustrated booklet and details.

Stic-Klip MANUFACTURING CO. INC.
54 Regent Street, Combridge 40, Mass.



# Tubing Drawn by PENN is Better!



The uniform standards in wall, grain structure and temper in specified PENN Quality tubing and the vigilant watchfulness in protected shipments permit more feet of usable tubing per pound through less waste.

The friendly cooperation of the entire PENN staff to adjust themselves when the unusual happens and PENN'S faithful "on time" delivery which is maintained in connection with definite and often times close production schedules all adds up to a Plus that is pretty hard to evaluate in dollars and cents.

For over a third of a century now, PENN continues to lead the way in supplying better tubing from 1" O.D. to capillary .062 in straight-coiled-fitted-flared and fabricated forms for the Refrigeration and Air Conditioning markets. No matter what you do, if you need TUBING, you can do it BETTER with PENN Quality-Specify it.

Nothing quite matches this Pann trie. PENN uniform quality—PENN dependable trustworthiness and PENN friendly cooperation. Get to know them and you'll agree. Write direct or contact the PENN representative in your area.



# PENN BRASS & COPPER COMPANY ERIE, PENNSYLVANIA

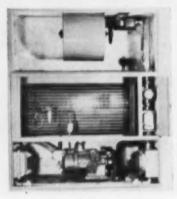
TELEPHONE 3-1164

AYTON Karl W. Wilks, J. RE STATE 1575—¾ hp, 115 volt, 7½ amp; and M 1057—1 hp, 230 volt. Chassis contains 1450 rpm fan motor, and oversize blower wheel which delivers conditioned air at 900 fpm for deep penetration cooling. Has compact cabinet and simple installation kit which allows versatility of installation and will fit into windows as narrow as 24". Cabinet measures 22-3/16 x 24-1/2 x 14-1/4. Has automatic thermostat.

Circle No. 188 on Reader Service Card

**Packaged Conditioner** 

**Product:** Explosion-resistant packaged air conditioner for installation in hazardous areas.



Manufacturer: Conditioned Air, Inc., Charleston, W. Va.

Features: Available in 3, 5½, and 7½-ton sizes, Uses Worthington hermetic compressors, condensers, and coils. Fans are of non-sparking construction with static conducting belts. Hermetic motor is under positive gas pressure.

Circle No. 189 on Reader Service Card

#### Permanent Filter

Product: Dust-magnet (Model J-C) air filter,

Manufacturer: Stoddard Industries, Inc., Chicago, Ill.



Features: Designed as permanent replacement for conventional 1/2" filters in room air conditioners. Available in any size. Has tension frame of rust-proof wire that keeps plastic woven mesh taut. Bound in

flexible green plastic reinforced with brass-plated corner pieces. Filter works by electrostatic action. Particles of dust and dirt are attracted to surface of plastic by inherent electrostatic characteristics maintained and increased by passage of air under pressure. Can be rinsed clean under water from faucet.

Circle No. 190 on Reader Service Card

#### **Conditioner Cover**

**Product:** Air conditioner protective cover in 23 sizes designed for snug fit on most major units.

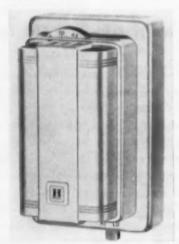
Manufacturer: Ero Mfg. Co., Chicago, Ill.

Features: Available in two styles. One style has flap which can be uncovered when unit is being used for heating or exhausting air. The other keeps unit completely covered while turned off in winter. Both covers are made of tough water repellent vinyl plastic cloth. Elastic strap and safety clip prevent flapping or tearing from strong winds. Easily installed or removed from inside room.

Circle No. 191 on Reader Service Card

#### 2-In-1 Thermostat

**Product:** Low-voltage unit (T-29B) combining two thermostats and manually-operated hi-lo changeover switch.



Manufacturer: Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Features: High setting is adjustable between 67 and 75 F. Snap of switch at base of control changes to fixed (55 F) low setting. Has locking cover to prevent tampering. Dimensions are 5-1/4" high, 2-15/16" wide, and 2-9/16" deep.

Circle No. 192 on Reader Service Card

BUY FROM YOUR REFRIGERATION WHOLESALER

#### **Cooling Tower**

Product: 75-ton cooling tower.

Manufacturer: Halstead &
Mitchell, Pittsburgh, Pa.

Features: Wetted deck wood is pressure-creosoted and the more than 153 elements toxic to fungi in the creosote help promote longer product life. Makes use of 4-blade, slow-speed, zinc-plated and chromate-dipped fan which provides quiet operation. Fan shafts are of stainless steel. Three protections are used on



steel cabinet to eliminate rust. Hydraulically applied to force paint into every opening, Vinsynite, vinyl zinc, and chlorinated rubber paints provide completely bonded, flexible, and impervious coating.

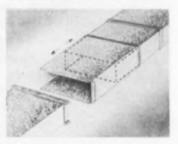
Circle No. 193 on Reader Service Card

#### **Telescopic Connector**

**Product:** Telescopic connector fitting ("Adjusta-Duct") for expediting installation of flat duct and fittings.

Manufacturer: Duc-Pac, Inc., East Longmeadow, Mass.

Features: Is adjustable, sleevetype which eliminates all cutting, notching, and joining of fill-in sections of stack duct. Opening is filled by telescoping fitting. Internal and



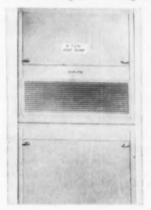
external lip-seal flanges provide wiping action, helping to assure tighter connections. Available in several adjustable lengths.

Circle No. 194 on Reader Service Card

#### Packaged Heat Pump

Product: Packaged heat pump available in sizes from 2 to 10-hp. Manufacturer: WeatherKing of Florida, Inc., Orlando, Fla.

Features: "Aqua-Air" jet provides maximum efficiency of condenser-chiller during heating operation. Has four-way automatic reversing valve. Six row coils help insure maximum heating and cooling ca-



pacity. Units are of water-to-air type and are available both as self-contained or with separate compressor and fan sections for remote installa-

Circle No. 195 on Reader Service Card

BUY FROM YOUR REFRIGERATION WHOLESALER **Electronic Cleaner** 

Product: "HEV" electronic air

Manufacturer: Trion, Inc., Mc-Kees Rocks, Fla.

Features: Provides ventilation air twice as clean as that supplied by standard electronic air cleaners or 17 times cleaner than air which passes through mechanical filters, manufacturer claims. Rated in excess of 95% at 450 fpm, and even at 500 fpm its efficiency is well in excess of 90%, says manufacturer. Supplied in both custom-built packaged units and in field-assembled units. Has automatic maintenance, and operates on principal of electrostatic precipitation. High voltage electrostatic charge is given to all dirt and foreign matter entering

Circle No. 196 on Reader Service Card



one piece. Has interchangeability to accommodate all standard brackets and special mounts. Rated at 1½ through 16 watts. Is of 4-pole design, 1550 rpm, 115 volts, 60 cycles.

Circle No. 197 on Reader Service Card

All-Angle Motor

Product: Lightweight, single-bearing, all-angle "AM-4 MonoMo-

Manufacturer: Redmond Co., Inc., Owosso, Mich.

Features: "Tri-Flux" design helps to increase efficiency and starting and running torques by added third area of magnetic flux with patented lamination design. Stator core frame is precision die cast in NEW U.S. AIR CO. CHICAGO DISTRIBUTOR

Absorption Cooling & Heating, of Chicago, has been named a distributor by the United States Air Conditioning Corp. Headed by Joe Lazar, president, the distributing and contracting firm will handle the entire USAirCo. line of residential and commercial air conditioning equipment.

# HIGHEST QUALITY—WIDEST SELECTION

# AIRSERCO MANUFACTURERS OF

- REFRIGERANT HANDLING AND MEASURING EQUIPMENT
- TESTING INSTRUMENTS AND EQUIPMENT

AIRSERCO supplies the industry's most complete line of refrigerant handling and precision measuring equipment, including:

- portable service stations
- precision charging tubes
- portable evacuators
- manometers
- leak detectors
- Kinney vacuum pumps
- vacuum gauges
- · refrigerant stands
- vacuum couplers
- electric analyzers
- pressure-temperature controlled automatic charging units







KC-2 PORTABLE HIGH VACUUM PUMP

ELECTRIC ANALYZER

WRITE FOR FREE CATALOG

Airserco has built more refrigeration testing equipment than any other company in the world.

AIRSERCO MANUFACTURING CO., INC. INTERNATIONAL SALES OFFICE

PITTSBURGH 13, PENNSYLVANIA, U.S.A. 90 WEST STREET, NEW YORK, N.Y.

Circle No. 68 on Reader Service Card

#### GROW - GROW . . .

Continued from page 51

aging of a nationally distributed line of hair lacquers. This necessitated the installation of an entire new packaging line, as the nature of these lacquers made it be mandatory that they come in contact with nothing but stainless steel all throughout the entire packaging process.

The next step, then, was the addition of two 500-gal, batch coolers for the new concentrates. These are simply large stainless steel tanks with coils arranged on the inside of the walls. Each tank is powered by a 5-hp condensing unit.

Installation of the new stainless steel packaging line, of course, also meant the addition of more refrigerated filling bowls and more process piping. A 50-hp, two-stage compressor was installed for cooling the propellant for the new line. Four new counterflow chillers, cross-connected to form one chiller in a parallel arrangement, also were added. All of this, of course, meant more business for Chicago Conditionaire.

Somewhat later it was found necessary to install an additional 750-gal. batch cooler to handle concentrate for the new hair lacquer packaging line. Result? Another nice piece of business for the contracting firm.

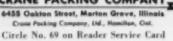
Then, as if to demonstrate even more clearly how directly changes within a process industry are reflected in the business of the contractor supplying the process equipment, the manufacturer of the hair lacquer changed its formulas so that it was necessary to put more of the concentrate into the cans during Barr's packaging operation. This meant that a continuous chiller would be more desirable because more concentrate had to be cooled, and consequently storage of the concentrate became a problem.

As a result of this decision, Chicago Conditionaire was called upon to design and build up a 10-hp stainless steel continuous chiller expressly for this purpose. Powered by two 5-hp condensing units, this chiller was constructed with a double pass arrangement. The refrigerant is put through the high temperature chiller to cool the concentrate to 5 F, and the low temperature condensing unit then is used to bring it down from 5 F to -10 F.

The complete satisfaction of the Barr organization with the work done by Chicago Conditionaire recently led to a limited but profitable sideline for the contracting firm. This was the development and production for the manufacturer of the hair lacquer of a compact refrigerated aerosol packaging setup for use in spray packaging the product in foreign countries.

As designed and construced by Chicago Conditionaire, this setup actually involved two separate "package" systems — a 1-hp, 50-gal. batch cooler for concentrate, and a 2-hp continuous chiller for Freon. To date, units of this type have been shipped to such far-flung places as Belgium, France, Cuba. Mexico, and Venezuela.







79-85 Walworth St. • Brooklyn S, N. Y.

Manufacturers of Sada Fountains and Luncheonette Equipment.

Export Dept.: 39 Broadway, New York 6, N. Y.

Circle No. 70 on Reader Service Card

SEPTEMBER, 1956 • COMMERCIAL REFRIGERATION



formance on all commercial refrigeration applications.

Try them yourself...order Sporlan "G" valves with Selective Charges from your Sporlan wholesaler today, and ask him for a new Sporlan Catalog showing the proper Catch-Alls and Solenoid Valves to go with them.

Better still... Buy Sporlan Right-Down-The-Line and get Peak Performance throughout,

SPORLAN VALVE COMPANY

7525 SUSSEX AVE., ST. LOUIS 17, MO.

# The Commercial Refrigeration & Air Conditioning

# APPLICATIONS MANUAL

# Air Conditioning As A Production Tool Is One Of Oldest And Most Important Applications

by Arthur H. Farr

BY far the most important function of air conditioning in industry today, the use of air conditioning as a production tool, is also the oldest, stemming from the earliest days of mechanical refrigeration in large-scale application. Almost all pioneering air conditioning installations toward the beginning of this century were industrial, with the sole aim of creating the conditions of temperature and humidity essential to the manufacture of certain products.

The spread of "comfort cooling" came slowly, almost as a by-product, and primarily as a result of improved techniques which greatly reduced the cost of air conditioning equipment. While comfort cooling now figures significantly on the industrial scene, in terms of heightened employee morale and efficiency, the use of air conditioning in industry remains now, as then, predominently one of mechanical necessity.

#### Precision Manufacturing "Must"

Many instances of this type of installation objective are to be found in precision manufacturing and assembly operations, where stability and exceedingly close tolerances must be maintained. For some years now a popular approach to the "close tolerance" problem has been to install a chiller in the recirculating coolant system which feeds a cooling medium down over the work being machined. In many instances, however—in close tolerance machine tool work—no coolant is sprayed over the work.

A case in point is a metal parts manufacturing plant located in Los Angeles, Calif. In this plant stable temperatures were especially necessary for the operation of a Pratt & Whitney jig borer which machines to a .00 tolerance at 68 to 70 F ambient temperature. Without controlled air temperatures, the expansion and contraction of metal parts — aluminum parts in particular—were vitally af-

fecting close tolerances. Variations in the finish machined parts of .0008 were noted when the temperature in the plant fluctuated 15 F during the normal day.

It was decided to air condition the plant in order to maintain the stable temperatures necessary to precise machining. It is interesting to note that, although the building is located less than three miles from the Pacific Ocean and therefore is in the California coastline's "cool zone", air conditioning was nevertheless required to maintain the proper temperature conditions.

With the installation of air conditioning, the problems of metal expansion and contraction were eliminated. The equipment—a 20-ton packaged air conditioning unit—serves as a ducted central station system, with grilles located at critical stoots throughout the plant.

The office area is also air conditioned by the same unit. A motorized, thermostat-controlled damper is situated in the ductwork to control the distribution of cool air to the office area, as the lower temperatures required in the plant are not necessary for office comfort. It has worked out that, in addition to the elimination of mechanical problems, the plant employees are pleased with the comfortable conditions they work in, and morale and efficiency are improved.

#### Comfort Cooling is Next

This raises a possible future sales aid to the air conditioning contractor who is aiming at the vast industrial market. In recent years, there has been an increasing tendency for the labor unions to bargain for "fringe benefits" rather than solely for wage increases. Employee morale has appeared in many recent demands by the unions, and-as a result - plants have installed cold drink and candy vending machines for the comfort of the workers. The next union request might be more specific by spelling out a demand for more comfortable temperature conditions in industrial plants.

# CASE FORMS COOLING SALES DEPARTMENT

W. A. Case & Son Mfg. Co., with general offices in Buffalo, has announced the formation of a refrigeration and air conditioning sales department to be headed up by E. H. Brown, a 25-year veteran of the refrigeration industry.

R. J. Nuber, president, says this is the first step in a major company expansion which will make Case one of the largest distributors of cooling equipment.



CONTROLLED TEMPERATURES necessary for precise machining operations are maintained in this metal parts manufacturing plant by the 20-ton packaged air conditioner shown above. The equipment serves as a central ducted system, with air outlets located at critical spots throughout the plant.



# ANNOUNCING a whole new family of "VIRGINIA" WATER TREATMENT CHEMICALS!

"Virginia" announces the introduction of an entire new family of superior water treatment chemicals specifically designed for use in the air-conditioning, refrigeration and heating industries. These products were developed under field test methods which established their efficiency for practical use.

#### WATER TREATMENT and SCALE INHIBITOR

"Virginia" Water Treatment & Scale Inhibitor is a special blend of sparingly soluble glassy polyphosphates which hold scale-forming solids in suspension or solution, greatly reducing scale buildup on metal surfaces. The slow, controlled solubility of the crystals supplies a continuous, effective inhibiting dosage—no feeder devices are required.

#### SCALE REMOVERS (Solid and Liquid)

When scale has already accumulated, "Virginia" Scale Removers are safe, quick and economical to use. Avail-

able in dry granular form for maximum safety to equipment, and for use in localities where water hardness is less than 200 parts per million; also in liquid form for heavier incrustations and where water hardness is greater than 200 parts per million.

#### NEW ALGAECIDES

"Virginia" Algae-Cide No. 1 is an organic copper compound which releases an exceptionally high copper ion concentration. It is more effective and more economical than ordinary copper salts. "Virginia" Algae-Cide No. 2 is a blend of two different water-soluble organic compounds for use in eliminating slime and mixed infestations of slime and algae. It is also recommended for killing copper resistant algae.

#### ICE MACHINE CLEANER

"Virginia" Ice Machine Cleaner rapidly and effectively removes scale Circle No. 72 on Reader Service Card and slime from ice machines. It eliminates the cause of objectionable odors and prevents formation of cloudy ice. It is easy, safe and economical to use.

> Write for free literature about all of these products

Refrigeration Division 239 Jefferson St. VIRGINIA SMELTING COMPANY West Norfolk, Va.



ESOTOO - RINETIC CHEMICAL'S "REON" REFRIGERANTS -V. METN-L CAN-O-GAS - PERMAGUM - PRESSTITE TAPE - RWIR WRAP - SUNISO REFRIGERATION OILS - WATER TREATMENT CHEMICALS

Available in Canada and many other countries

#### JUST SCRATCHING ...

Continued from page 89

What's more, since Allison's hatchery has not enjoyed the benefits of air conditioning before, he believes the installation of this year-round system actually will make money for him.

For example, he is now setting 560 trays of eggs a week, with an average of 156 eggs to a tray. If he hatches just 5% more chicks from each tray during summer months, he will increase his live chicks by about 3900 a week. And since chicks are now selling at 15 cents each, Allison would increase his income by nearly \$600 per week during the summer season, or about \$11,000 a year.

Successful hatchery operation calls for constant "springtime conditions," Allison says, from the time the eggs first come into the hatchery until the one-day-old chicks are shipped out. It takes about three weeks to complete the process, including storing the eggs,

these economical hangers!

putting them into incubator trays, then eighteen days in the setting incubator, then to a hatching incubator for another three days, and finally the removal of the newlyhatched chicks to the shipping room for crating and delivery to their destination.

The electric heat pumps, by cooling in summer and heating in winter, help at every stage of the hatchery's operation.

After the eggs come into the hatchery, first step in the process is "traying" them. On hot summer days, eggs can easily be damaged by the workers who put them by hand into the trays. Temperature and humidity control will cut down summertime losses on handling eggs during the traving operation.

After the eggs are traved, they go into the setting incubator. This is a big machine in which the eggs are automatically turned, and are kept at a temperature of 99 F with 86% humidity.

The heat pumps, by controlling room temperature and humidity. make it easier for the incubator to do its job. Since temperatures and humidity are controlled in the room where the incubator is located, the incubator will not have to work so hard to overcome changing outside conditions. And of course the fact that the heat pump filters and cleans the room air also will help the incubator.

The next stage is transferring the eggs to a hatching incubator, where they hatch in about three days. Here again the heat pumps help the incubator to do its job of controlling temperature and humidity. The heat pumps also should help in summertime to cut down on smothering of the chicks.

Finally, the one-day-old chicks are packed and shipped. Even while they are waiting to be packed, many chicks are smothered. With controlled temperature in summertime, Allison believes he can cut down on chick losses in this pre-packing period.

All of this adds up to more efficient operation of Allison's hatchery, and more profit for this progressive hatchery operatorthanks to heat pumps!



ar W. D. Elmslie, Ltd., 4	orporated, Donville 40, Illinois 1837 Lawrence Blvd., Montreal, Canada lete details and prices on Genwe and ion Hangers.
Name	
Company	
Address	
City	State

# MAKE FRIENDS! When you install this quality-built PINNACLE Wall Type BEVERAGE CASE



tomers! This outstand-ing Beverage Case has all the features found in other top quality com-mercial refrigerators ... plus Easier Rolling Doors (has Stainless Steel Rollers) . . . Bet-ter Insulated Doors and Jambs (practically eliminate condensation and chance of short circulting) Lifetime cuiting) . . . Litetime Finishes (chip-proof, rust-proof and stain-proof . . , Better Lightproof . . , Better Light-ing (shows more, bet-

oling system—coiling hung colain or Stainless Steel. ocle Territory Franchises are still available. write today for full information and i literature!

EXPORT DEPT .-- 39 Broadway, New York

Circle No. 74 on Reader Service Card SEPTEMBER, 1956 . COMMERCIAL REFRIGERATION

# YOU'RE PROTECTED 3 WAYS WHEN YOU INSTALL

# AMERICAN

VIBRATION ELIMINATORS



Circle No. 75 on Reader Service Card

FOR AMERICAN VIBRATION ELIMINATORS SEE YOUR

DISTRIBUTOR



MODEL D M 309 QT. CAPACITY MODEL D M 402 QT. CAPACITY

Freez-rite merchandisers move food faster, Ideal for special promotions at traffic hot-spots. Easy-to-read price panels, full view glass fronts, eliminate shopper bottle-necks, encourage impulse buying. Automatic defrosting.

- LOWER INITIAL COST . . . cost per displayed peckage, lowest in field!
- LOWER INSTALLATION COST...

  [ust plug in. Only 110 volt line
  needed. Small enough to slide
  through front door.
- LOWER OPERATING COST . . . . Single condensing unit operates for as little as 10¢ per day.
- LOWER UPKEEP ... no belts, no plug-ups, sealed units need no maintenance.

FREEZ-RITE displays and SELLS foods as well as units twice as large costing twice as much! Freez-rite

17172 REDFORD AVE DETROIT 19, MICHIGAN

IN NEW
DISTRIBUTOR

send coupon PLAN

for details

FREEZ-RITE

17172 REDFORD AVE., DETROIT, MICH. Send full details on your new sales plan for distributors.

NAME

FIRM NAME

STREET\_

CITY\_

Circle No. 76 on Reader Service Card

STATE

ALMOST FOR FREE . . .

Continued from page 75

about 120 F. In winter months, instead of this water being washed it is pumped through a specially designed piping layout which carries it through the coils of the air conditioning system.

In the original system design it was planned to install a shell-and tube heat exchanger for stand-by purposes in the event of shut-down of the processing furnaces. Plant officials, however, decided not to install the heat exchanger until a need for it was definitely established. During two heating seasons there has been no occasion when heat was required to augment that supplied by the furnaces.

Air conditioning for the offices is supplied by a Trane air handling unit which incorporates fan, filters, humidifier, and plenum with the heating and cooling coils. Outside air and recirculated air are mixed in this unit and then passed across the coils for heating or cooling to the desired temperature.

This conditioned air is then discharged at the rate of 9000 cfm into a duct system for distribution throughout the occupied area by means of ceiling diffusers.

In the instrument room, balance room, library, and private offices, Trane fan-coil room air conditioning units are utilized. Supplied with hot or cold water according to season, these individually controlled units maintain conditions to suit the desires of room occupants.



"You boys will have to hurry—my work order says the air conditioning units are to be installed today!"

Temperature adjustments made on one unit have no effect upon the performance of the rest of the system.

A separate Trane air handling unit supplies conditioned air to the research space, analytical rooms, and other areas of the laboratory section. A high percentage of outside air is used here because of the type of work carried on.

Thus it is that with maximum ingenuity and minimum expense this industrial plant is provided with year-round comfort air conditioning—all because someone took the pains to analyze the situation thoroughly before attempting to design the system.

#### B.A.C. NAMES TWO

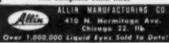
Two exclusive sales representatives have been appointed by Baltimore Aircoil Co. Taylor, Lipscomb & Appel, Inc., has been named for Virginia, and J. P. Ashcraft Co., Inc., will represent Baltimore in northern Texas and Louisiana.



complete, self-contained, economy unit.

Ask your wholesaler new.

Write today for catalog covering the complete Allin line.



Circle No. 77 on Reader Service Card

#### BRUNNER STOCKHOLDERS DEFEAT SALE PLAN

A proposal for the sale of Brunner Mfg. Co. to the Bendix-West-inghouse Automotive Air Brake Co. failed to get the required two-thirds vote of the outstanding stock at a special meeting of Brunner stockholders recently in Utica, N. Y.

Brunner will continue in its present setup, and A. G. Zumbrun, Sr., said that the stockholders vote is "an authorization to the board of directors and the working management of Brunner to find means for the continuation of our present rapid growth and progress."

Bendix-Westinghouse wished to acquire Brunner, according to an official statement by the company, to "provide a recognized name in the commercial refrigeration field which would strengthen the diversification program of Bendix-Westinghouse and accelerate the current program at the Elyria plant in the central home air conditioning and automotive field as a component supplier."

#### TRANE WIDENS PROGRAM FOR SCHOLARSHIPS

Trane Co. has expanded its scholarship list to include University of Michigan, Georgia Institute of Technology, and Texas A & M. Faculties at the colleges will select engineering students for aid beginning with the fall term.

#### CARRIER SETS UP RESEARCH SUBSIDIARY

Formation of Colorado Research Corp., with headquarters in Denver, as a subsidiary of Carrier Corp. has been announced by Cloud Wampler, Carrier board chairman.

Initially, the new organization will confine itself to the fields of electronics and applied physics. Its services, including model shop facilities, will be available to government and educational institutions as well as to industry. Special work related to air conditioning will be done for Carrier.

President of Colorado Research is Dr. Richard C. Webb. Dr. Wil-



PROSPECTS FOR CAR COOLING just can't miss these oversize billboards currently being employed in the Miami, Fla., area by Novi Equipment Co. to promote its line of automobile air conditioners. Dennis Nolan, manager of the company's Florida division, reports that results of a recent survey indicated that 80% of Novi's customers in this territory first learned of the product from one of these billboards. "Our prospects are automobile drivers," Nolan points out, "and it's pretty safe to say that almost anyone who drives sooner or later will see one of our billboards."

liam R. Jewell is vice president. Both were formerly with the Denver Research Institute at the University of Denver.

Administration and laboratory facilities presently are at 4697 and 4771 E. Evans Ave., Denver.

#### AIRTEMP ENLARGES PRODUCTION FACILITIES

Airtemp Div., Chrysler Corp. has enlarged its air conditioner production facilities with the addition of a new \$1,500,000 machine line, which was scheduled to be in operation the latter part of August.

The company will start manufacturing three new air conditioner compressors, one for its car air conditioner and two hermetically sealed compressors for home air conditioning units. A new compressor assembly section is also being added, and a pair of new automatic coil-making machines is being installed to turn out car air conditioner cooling coils.

#### CARRIER SCHOLARSHIPS OFFERED AT 4 COLLEGES

Scholarships for mechanical engineering study at four selected colleges have been announced by the Carrier Foundation, Inc.

The 1956 Carrier scholarships will be awarded for the five-year course at Cornell University and for the four-year terms at Georgia Institute of Technology, Rensselaer Polytechnic Institute and University of Kentucky. The award is \$750 each year which can be used by the winners for normal college expenses.

Instituted last year, four scholarships will be awarded annually to deserving young high school graduates who require financial assistance in order to secure a college education. Four students are currently completing their freshman year at Cornell, Kentucky, Purdue University and Syracuse University.

#### CAPITOL INSTITUTE SETS COOLING SHOW

An air conditioning, ventilating and electric space heating exposition will be conducted by the Electric Institute of Washington in the Sheraton Park Hotel on Feb. 3 to 10, 1957.

Exhibit space of 10,000 sq. ft. will be available in the Sheraton Park's new exhibit hall. Most exhibits will be for residential use, but self-contained commercial units also are eligible for showing. Space sales will be limited to manufacturers and distributors, who may assign retail personnel to their booths.

Additional details may be obtained from William G. Hills, managing director of the Institute, Pepco Building, 10th & E Sts., N. W., Washington 4, D. C.



MODEL D 48 309 QT. CAPACITY MODEL D M 402 QT. CAPACITY

Freez-rite merchandisers move food faster, Ideal for special promotions at traffic hot-spots. Easy-to-read price panels, full view glass fronts, eliminate shapper battle-necks, encourage impulse buying. Automatic defrosting.

- LOWER INITIAL COST . . . cost per displayed package, lowest in
- LOWER INSTALLATION COST . just plug in. Only 110 voit line needed. Smull enough to slide through front door.
- LOWER OPERATING COST . Single condensing unit operates for as little as 10¢ per day,
- LOWER UPKEEP . . . no belts, no units need no plug-ups, sealed naintenance.

PREEZ-RITE displays and SELLS foods as well as units twice as large costing twice as much!

Freez-rite

17172 REDFORD AVE. DETROIT 19 MICHIGAN

LOWER DEALER COSTS IN NEW DISTRIBUTOR

PLAN send coupon

for details

FREEZ-RITE

17172 REDFORD AVE., DETROIT, MICH. Send full details on your new sales plan for distributors.

NAME

FIRM NAME

STREET

STATE

Circle No. 76 on Reader Service Card

ALMOST FOR FREE . . .

Continued from page 75

about 120 F. In winter months, instead of this water being washed it is pumped through a specially designed piping layout which carries it through the coils of the air conditioning system.

In the original system design it was planned to install a shelland tube heat exchanger for standby purposes in the event of shutdown of the processing furnaces. Plant officials, however, decided not to install the heat exchanger until a need for it was definitely established. During two heating seasons there has been no occasion when heat was required to augment that supplied by the furnaces.

Air conditioning for the offices is supplied by a Trane air handling unit which incorporates fan. filters, humidifier, and plenum with the heating and cooling coils. Outside air and recirculated air are mixed in this unit and then passed across the coils for heating or cooling to the desired temperature. This conditioned air is then discharged at the rate of 9000 cfm into a duct system for distribution throughout the occupied area by means of ceiling diffusers.

In the instrument room, balance room, library, and private offices, Trane fan-coil room air conditioning units are utilized. Supplied with hot or cold water according to season, these individually controlled units maintain conditions to suit the desires of room occupants.



"You boys will have to hurry-my work order says the air conditioning units are to be installed today!"

Temperature adjustments made on one unit have no effect upon the performance of the rest of the

A separate Trane air handling unit supplies conditioned air to the research space, analytical rooms, and other areas of the laboratory section. A high percentage of outside air is used here because of the type of work carried on.

Thus it is that with maximum ingenuity and minimum expense this industrial plant is provided with year-round comfort air conditioning - all because someone took the pains to analyze the situation thoroughly before attempting to design the system.

B.A.C. NAMES TWO

Two exclusive sales representatives have been appointed by Baltimore Aircoil Co. Taylor, Lipscomb & Appel, Inc., has been named for Virginia, and J. P. Ashcraft Co., Inc., will represent Baltimore in northern Texas and Louisiana.



000 000 Liquid Type fald to Date Circle No. 77 on Reader Service Card

ALLIN MANUFACTURING

410 N. Hermitage Ave Chicago 22, III.

Write today for catalog covering

the complete Allin line.

#### BRUNNER STOCKHOLDERS DEFEAT SALE PLAN

A proposal for the sale of Brunner Mfg. Co. to the Bendix-Westinghouse Automotive Air Brake Co. failed to get the required two-thirds vote of the outstanding stock at a special meeting of Brunner stockholders recently in Utica, N. Y.

Brunner will continue in its present setup, and A. G. Zumbrun, Sr., said that the stockholders vote is "an authorization to the board of directors and the working management of Brunner to find means for the continuation of our present rapid growth and progress."

Bendix-Westinghouse wished to acquire Brunner, according to an official statement by the company, to "provide a recognized name in the commercial refrigeration field which would strengthen the diversification program of Bendix-Westinghouse and accelerate the current program at the Elyria plant in the central home air conditioning and automotive field as a component supplier."

#### TRANE WIDENS PROGRAM FOR SCHOLARSHIPS

Trane Co. has expanded its scholarship list to include University of Michigan, Georgia Institute of Technology, and Texas A & M. Faculties at the colleges will select engineering students for aid beginning with the fall term.

#### CARRIER SETS UP RESEARCH SUBSIDIARY

Formation of Colorado Research Corp., with headquarters in Denver, as a subsidiary of Carrier Corp. has been announced by Cloud Wampler, Carrier board chairman.

Initially, the new organization will confine itself to the fields of electronics and applied physics. Its services, including model shop facilities, will be available to government and educational institutions as well as to industry. Special work related to air conditioning will be done for Carrier.

President of Colorado Research is Dr. Richard C. Webb. Dr. Wil-



PROSPECTS FOR CAR COOLING just can't miss these oversize billboards currently being employed in the Miami, Fla., area by Novi Equipment Co. to promote its line of automobile air conditioners. Dennis Nolan, manager of the company's Florida division, reports that results of a recent survey indicated that 80% of Novi's customers in this territory first learned of the product from one of these billboards. "Our prospects are automobile drivers," Nolan points out, "and it's pretty safe to say that almost anyone who drives sooner or later will see one of our billboards."

liam R. Jewell is vice president. Both were formerly with the Denver Research Institute at the University of Denver.

Administration and laboratory facilities presently are at 4697 and 4771 E. Evans Ave., Denver.

#### AIRTEMP ENLARGES PRODUCTION FACILITIES

Airtemp Div., Chrysler Corp. has enlarged its air conditioner production facilities with the addition of a new \$1,500,000 machine line, which was scheduled to be in operation the latter part of August.

The company will start manufacturing three new air conditioner compressors, one for its car air conditioner and two hermetically sealed compressors for home air conditioning units. A new compressor assembly section is also being added, and a pair of new automatic coil-making machines is being installed to turn out car air conditioner cooling coils.

#### CARRIER SCHOLARSHIPS OFFERED AT 4 COLLEGES

Scholarships for mechanical engineering study at four selected colleges have been announced by the Carrier Foundation, Inc.

The 1956 Carrier scholarships will be awarded for the five-year course at Cornell University and for the four-year terms at Georgia Institute of Technology, Rensselaer Polytechnic Institute and University of Kentucky. The award is \$750 each year which can be used by the winners for normal college expenses.

Instituted last year, four scholarships will be awarded annually to deserving young high school graduates who require financial assistance in order to secure a college education. Four students are currently completing their freshman year at Cornell, Kentucky, Purdue University and Syracuse University.

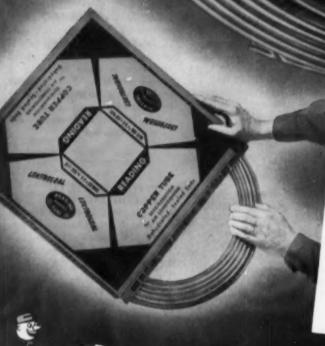
#### CAPITOL INSTITUTE SETS COOLING SHOW

An air conditioning, ventilating and electric space heating exposition will be conducted by the Electric Institute of Washington in the Sheraton Park Hotel on Feb. 8 to 10, 1957.

Exhibit space of 10,000 sq. ft. will be available in the Sheraton Park's new exhibit hall. Most exhibits will be for residential use, but self-contained commercial units also are eligible for showing. Space sales will be limited to manufacturers and distributors, who may assign retail personnel to their booths.

Additional details may be obtained from William G. Hills, managing director of the Institute, Pepco Building, 10th & E Sts., N. W., Washington 4, D. C.

# TEADING "ZEKTROSEAL" COPPER REFRIGERATION TUBE



# FIRST STEP in a Quality Installation—

Soft temper for easier forming . . . dehydrated — with crimped ends to seal out all moisture and dirt . . . and keep the inside surface absolutely clean. Comes in handy 50-foot coil packed in its own convenient protective carton, clearly labeled for easy identification. To be sure of the job — be sure to specify Reading.



Sold Through Wholesalers Only

## READING TUBE CORPORATION EMPIRE STATE BUILDING, NEW YORK 1, H. Y. WORKS: Reeding, Pa.

Distribution READING, PA.

Depots: WOODSIDE, L.

WOODSIDE, L.I., N.Y. 57-17 Northern Blvd.

CHICAGO, ILL. 724 W. 50th St.

#### BALLAS, TEXAS 9000 Sovereign Re

9000 Sovereign Row Brook Hollow Industrial District

HOUSTON, TEXAS 1121 Rothwell St.

#### GAKLAND, CALIF. 410 Hegenberger Road

LOS ANGELES, CALIF. 120 No. Santa Fe Ave.

DENVER, COLO. 2845 Walnut St. CLEVELAND, OHIO 4615 Perkins Ave.

ATLANTA, GA. 690 Murphy Ave. S.W., Unit 5, Bldg. B

#### INTEREST RUNS HIGH IN 21ST ARW MEETING

Advance registrations for the 21st annual meeting of Air Condi-



E. B. Mapel

tioning and Refrigeration Wholesalers, to be held Oct. 24 to 26 in the Jung Hotel, New Orleans, indicates that this year's meeting will attract the largest attend-

ance in the history of the association, ARW headquarters reports.

ARW directors will meet on Oct. 23 and will climax their affairs with a dinner at Kolb's Restaurant.

Activities on Wednesday, Oct. 24 will include advance registration, ladies' open house, a harbor tour on the yacht "Good Neighbor", walking tours, etc. Also scheduled for that day is the men's golf tournament at New Orleans Country Club.

Annual business meeting of ARW, with president E. L. Tramposh presiding, will begin at 10 a.m. on Oct. 25. Morning session will include officers' and committee reports, selection of the 1957 program by members, and election of directors.

#### Distribution Is Keynote

Kickoff luncheon at 12:30 p.m., with R. E. Warwick, convention committee chairman, presiding, will have as the keynote speaker Eugene B. Mapel, vice president of Barrington Associates, New York City management consultant firm. Well known as a speaker and consultant on distribution and merchandising methods, Mapel's talk will be slanted at wholesaler problems.

Afternoon session on Oct. 25 will cover the ARW educational conference report, including presentations by J. P. Glass, Chase Supply Co., and Herman Goldberg, Standard Refrigeration Co., on what's happening in Chicago to promote ARW wholesaling. Reception, entertainment and the past presidents' dinner will close the day's doings.

Morning meeting on Oct. 26 will have as featured speakers Robert W. French, vice president of Tulane University, and Dr. Hall C. Taylor, professor of business administration at Tulane.

Product group meetings will occupy the afternoon, and evening activities will include the officers' reception at 6:30 p.m., followed by the annual ARW banquet, at which awards and golf prizes will be distributed, and the 1957 officers and directors of the association introduced. The new directors group will hold its first meeting on Saturday, Oct. 27.

Fifteen-year membership awards will be made to 19 wholesaler firms at the banquet.

Convention committee has as chairman R. E. Warwick, Plumbing Wholesale Co., Jackson, Miss.; other members are Al Boiehm, Nola Sales Co., New Orleans; J. R. Cartullo, Standard Brass & Mfg. Co., New Orleans; Harry Dawson, Acme Refrigeration Supplies, New Orleans; Iddo Lampton, Enochs Sales Co., New Orleans; Vance Rutledge, N. O. Nelson Co., Memphis. Fred W. Wilson, Standard Brass & Mfg. Co., Port Arthur, Tex., is advisor to the committee.

Circle No. 81 on Reader Service Card

# ROTARY

### Replacement Units

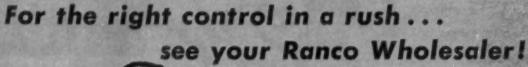
Available in a wide size range for Commercial, Semi-Commercial, Air Conditioning and Home Refrigerators.

EASY TO INSTALL \* ECONOMICAL





EMPERATURE INDICATORS AND RECORDERS





Ranco Speed-Up Orders Filled Promptly

An impatient customer. A hot job. A control seldom found. Your Ranco Wholesaler can help you in a hurry. Ranco's unique Speed-Up Factory Order Service enables him to give you the fastest delivery in the

industry on the finest controls in the world.

On controls not catalogued, your Ranco Wholesaler mails your special order, the Ranco factory fills it within a few days, and it's in your hands promptly.

#### World's Largest Line of Replacement Controls

Ranco's line of replacement controls for nearly 5,000 distinct applications far exceeds that of any other manufacturer. And additional models are constantly being added to that line. Each control is listed—by specific application—in the Ranco Replacement Reference (No. 1544) on sale

at your Ranco Wholesaler's (Not available from factory). Why not take advantage of Ranco's superior service now? Use your Ranco Replacement Reference to choose the quality Ranco Control that's designed for the job. Depend on your Ranco Wholesaler to get you the right control when you need it.



Ranco Inc.

COLUMBUS 1, OHIO

World's Largest Manufacturer of Refrigeration Controls

Circle No. 82 on Reader Service Card

SEPTEMBER, 1956 . COMMERCIAL REFRIGERATION

# Here's How

#### PROFITABLE SERVICE AND INSTALLATION PRACTICES

Deathtraps Are Target Of Govt. Agencies

Extensive tests this summer with children of National Bureau of Standards staff may help do away with the hazards of entrapment in refrigerators and freezers, it was announced today.

Conducted jointly by National Electrical Manufacturers Association and National Bureau of Standards, Department of Commerce, the tests are designed to study children's reactions to mechanical devices in an effort to find out how much they understand and can use the safety equipment provided for their protection. With this information, NEMA and NBS will be better able to develop requirements as the basis for satisfactory safety devices for refrigerators and other airtight enclosures.

At a recent Congressional hearing, NEMA and NBS reported their progress in the development of refrigerator safety criteria and devices to the Subcommittee of the Special Committee on Health and Science. The Subcommittee urgently requested immediate further action in evaluating and developing safety devices.

The investigation of the children's reactions to safety mechanisms is to be carried out at the National Bureau of Standards, in cooperation with the Children's Bureau of the Department of Health, Education, and Wilfare. Child psychologists will cooperate with NBS engineers who will design and construct special equipment.

Want Repeat Business? Leave Your Name on Each Job

Every serviceman knows that the very best way to get repeat business is to do careful, thorough work and use top quality repair parts. But the best possible service job won't win you any call-backs if the customer can't remember your name or phone number when the need for future service arises.

That's why it's so important to adopt some method that insures your name being left on every job you do. Stickers or decals are one of the best and simplest ways of accomplishing this. They serve



with a male flare fitting instead of a capillary tube, I take a piece of 1/3" capillary tubing (saved from old controls and water regulating valves), silver solder to each end a piece of 1/4" tubing with a flare nut, coil the capillary tubing, and then make my connections. This improvised device serves as an excellent vibration eliminator, preventing leaks due to strained or cracked tubing.

J. R. McConnell San Antonio, Tex.

the double purpose of reminding customers who did their service work and telling them how to get in touch with you the next time they need service.

Some successful servicemen use a type of sticker that not only carries their name, address, and phone number, but also reminds the customer that his equipment should be inspected periodically. Space is provided at the bottom of this sticker for a condensed record of the four or five most recent service calls, by date and type of service performed. Remember, when the average customer needs refrigeration or air conditioning service he doesn't have time to shop around. He jumps at the very first chance to get reliable repairs. That's why it's like money in the bank to keep your name and number where he'll be sure and see it when the emergency arises.

Moisture Enters System In Many Varied Ways

Moisture can enter a refrigeration system in many, many ways. The experienced serviceman will recognize this fact and be on guard against all of these possibilities. The less experienced mechanic may go to great lengths to prevent moisture from entering by the more obvious means, only to defeat his own purposes by allowing it to enter in some less obvious manner.

Here for the benefit of all servicemen—experienced or inexperienced—is a rundown of some of the principal ways in which moisture can enter a system:

- Leaking seal caps on stored and stocked equipment.
  - (2) Shut-off valves left open.(3) Condensation in cold tub-
- (3) Condensation in cold tubing and other parts, resulting from use of exposed tubing.
- (4) Moisture in and on internal surfaces of system.
- (5) Use of unsealed charging hose or charging manifolds.(6) Open funnels used in add-
- ing oil.

  (7) Use of any kind of hand
- pump in adding oil.

  (8) Use of wet oil or refrigerant as a result of improper field
- (9) Open system during repair. (10) Use of wet service cylin-
- (11) Wet driers (spent when installed).

Continued on page 112



THE MARK OF QUALITY

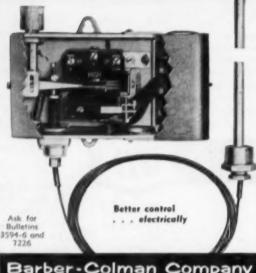
Vibration-proof Snap-acting switches Adjustable stages

Adjustable differentials FOR OPERATING

Compressors, pumps, valves, unloaders, relays



## Rugged, 3-stage thermostat simplifies circuits



Barber-Colman Company

DEPT. I, 1338 ROCK ST., ROCKFORD, ILLINOIS, U. S. A.



#### DEFROSTS AUTOMATICALLY

FOR FRESH MEAT ROOMS BELOW 34°F, FOOD STORAGE, FOOD FREEZING, ICE CREAM STORAGE, INDUSTRIAL LOW TEMPERATURE APPLICATIONS.

Defrastair's patented heat trop system takes adcontage of the fact that warm oir rises and can he trapped under a head. For example, move your hand a few inches above a lighted condle and only a small amount of heat is felt. New place a metal container over the condis. In a matter of minutes it is extremely hat because the heat is confined under the canopy or head.

Witt Defrestoir patented heat trap ceil requires only a low cost single pole, double throw time clack for complete automatic defrosting. Easy low cost installation, requires no re-evaporation or special plumbing. Available in 14 models ranging in BTU capacities of from 3800 to 38,000 at 10°7.0.

H. WITT COMPANY WITT

Circle No. 84 on Reader Service Card



For Quicker Installations

#### PREST-O-LITE Oxy-Acetylene Welding and Cutting Outfit

PORTABLE-Light and compact. Take it anywhere—use it anywhere. MODERN-Exclusive new blowpipe welds, cuts, and brazes. Just change the tip. No attachments or "extras" to buy.

HANDY-Small and easy to use. Always ready.

VERSATILE-Welds sheet and light plate; cuts easily through heavy steel. Changes over simply and quickly,

Oxygen and acetylene readily available in cylinders sized to meet your exact needs.

Write today for free descriptive booklet and name of nearest dis-

'Prest-O-Lite" is UCC's trade-mark.

LINDE AIR PRODUCTS COMPANY 30 East 42nd Street Ta New York 17, N. Y.

(12) Open flame on open end

(13) Intake of air by any means.

(14) Thermal breakdown of oil.

(15) Charging lowside without charging through drier.

(16) Lowside leak when operating on a vacuum.



#### WANT TO EARN \$5?

You don't have to be a literary genius to pick up a fast fivespot. All you have to do is jot down some of the shortcuts you've developed in your maintenance or installation work and send them to Here's How Editor, Commercial Refrigeration and Air Conditioning. If the Editor votes "yes" on your contribution, your \$5 will be paid promptly when your maintenance tip is published in the magazine. Let's hear from youl

#### PENN FALL TOUR OPENS SEPT. 13

The "Fall, 1956" edition of the Penn Controlorama will premier in Indianapolis on Sept. 13 and show in 16 midwestern cities before winding up in Peoria, Ill., on Oct. 22. Last spring's tour, which hit 22 eastern and northeastern cities, drew nearly 10,000 persons to break a 20-year record.

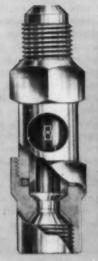
As before, the show will cover heating, air conditioning and refrigeration controls, and will start at 5:30 p.m. Those attending are expected to come directly from work; a free dinner is served between sessions.

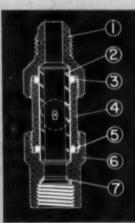
Here is the fall schedule: Indianapolis, Sept. 13; Fort Wayne, Sept. 17.; Chicago, Sept. 19 and 20; Milwaukee, Sept. 24; Madison, Sept. 25; LaCrosse, Sept. 27; Duluth, Oct. 1: Minneapolis, Oct. 3; Fargo, N. D., Oct. 5; Sioux City, Oct. 8; Omaha, Oct. 10; Lincoln, Oct. 11: Des Moines, Oct. 15; Cedar Rapids, Iowa, Oct. 17; Davenport, Oct. 19; and Peoria. Oct. 22.

Circle No. 85 on Reader Service Card

# TROUBLE DETECTOR

KEROTEST R81C MODEL IN-LINE SIGHT GLASS





- 1. Brass Cap
- 2. Pyrex Tubing With Blast Etched Indicator "K"
- 3. Buna N 1010
- 4. Brass Body
- 5. Buna N 1010 "O" Ring
- 6. Brass Cap
- 7. Copper Seal Gasket

The redesigned Kerotest R81C Model In-Line Liquid Indicator is an excellent trouble detector in any air conditioning or refrigeration liquid line.

An indicating "K" blast etched on the Pyrex sight glass magnifles when flow of refrigerant is uninterrupted and system is fully charged. When "K" is not magnifled it indicates a shortage of refrigerant or restriction of flow in the system. Gas bubble may also be seen in the sight ports indicating shortage of refrigerant.

The sturdy bar stock brass body protects the Pyrex heat resisting tubing and has adequate wrench flats for ease of installation.

Available in both male and female flare sizes with a maximum operating pressure of 300 p.s.i. and temperature of 200° Fahrenheit. Write for catalog pages today.

# KEROTEST

KEROTEST MANUFACTURING CO. 2523 LIBERTY AVE, PITTSBURGH 22, PENNSYLVANIA

#### REVOLUTION . . .

Continued from page 83

operation of equipment), actual inside conditions are specified which go beyond those requirements, with employee comfort in mind.

One of the questions asked in the survey was: "What proportion of U.S. factories do you estimate will be air conditioned for comfort by 1960? 1970? 1980? Please split your predictions between new construction and the addition of air conditioning to existing buildings."

Representative answers, as reported by various offices after checking with leading consulting engineers and architects (answers were based on their own areas), are shown in the accompanying table. Other survey highlights were:

DALLAS — quoting consulting engineer Sam Siram: "Public demands and union demands will pressure building owners to provide air conditioned spaces."

quoting P. L. Davidson, consultant who has offices there and in Greensboro, N. C.: "Unions are very active in the program in the textile industry and are insisting on an 80-degree effective temperature; in the textile field it is hard to divorce comfort cooling from process cooling, but the comfort requirement is becoming an important factor."

HOUSTON — quoting Bernard Johnson, of Bernard Johnson and Associates: "Air conditioning of factories in this area has not been purely for employee comfort but for the increased production obtained. In the Houston area air conditioning is as much a part of life as heating is in the colder areas."

Dale S. Cooper, of Dale S. Cooper and Associates, Houston, says: "The air conditioning of factories in this area is primarily for increased production and efficiency which results in profits to the owner. The fact that conditions for employee comfort are maintained is coincidental."

BOSTON - quoting Ambrose Burton, vice-president in charge of construction, Cabot, Cabot and Forbes, industrial developers: "There is a trend toward air conditioning of factories for employee comfort, especially in research and development work. Present acute shortage of good help, scientific and skilled, makes those industries include air conditioning for employee comfort. The trend is fast in this field, slow in other industries. Air conditioning of office areas is recommended to clients as a must."

**DETROIT** — Giffels and Vallet, architects and engineers, have been retained for a number of industrial installations. These include a Detroit machine shop conditioned for employee comfort and Bendix Aviation installations in Detroit and Baltimore making radar, radio and computing devices.

Trane Detroit office observes that General Electric air-conditioned its Electronics Park plant at Syracuse, N. Y., four or five years ago and as a consequence



was "able to corral the labor market in that area."

ST. LOUIS - Little factory air conditioning being installed now but industry is giving consideration to installing it later. Air conditioning produces more efficient production-experimental rooms, tool rooms and final assembly area, according to interviews, will be first to receive air conditioning. Unions are constantly asking better working conditions, and consensus is that air conditioning will be included in these demands.

NEW YORK - Basic reason for industrial air conditioning is competition for help. This requires air conditioning for offices and technical help. Air conditioning in manufacturing spaces solely for human comfort appears to be somewhat in the future. Most engineers bring up the subject of air conditioning in discussions with clients.

#### SAN FRANCISCO -

Trend is developing slowly because of low summer and mild winter temperature in Bay area in industrial sections. Increase in tendency to arrange installations to provide for cooling later is very pronounced.

BALTIMORE - Trend is developing. A few years ago that would have been pure speculation. Interest is increasing "at interesting rate." Engineers report that clients "respond favorably as they certainly realize the inevitability.

#### LOS ANGELES -

Many air-conditioned factories listed. Trend is snow-balling as companies compete for personnel in critical labor market. Harold Cross, vice-president Union Bank, recommends to bank's customers that they consider air conditioning to cut down turnover in personnel.

#### MUELLER BRASS OPENS PHILA. WAREHOUSE

The opening of a new warehouse to serve the Philadelphia, Pa. area has been announced by A. C. Dappert, vice president in charge of sales of Mueller Brass Co. The Company has operated a sales office in Philadelphia since 1938. This will now be housed in the warehouse building.

The warehouse, located at 810 South 53rd St., Philadelphia, contains over 15,000 sq. ft. of floor space and will enable Mueller Brass to provide prompt, efficient service to customers throughout the eastern half of Pennsylvania, the District of Columbia and part of Mary-

F. F. House is district sales manager, assisted by R. B. Miles. James Butler is the warehouse manager; he is assisted by C. D. Spencer.

#### ARMSTRONG ISSUES FILM ON PIPE INSULATION

An 11-minute sound-slide film about Armaflex pipe insulation has been released by the Insulation Div. of Armstrong Cork Co.

Interested groups may contact any Armstrong district office, or the company's Insulation Div., Lancaster, Pa., to arrange for a show-





HERMETIC
COMPRESSOR
OPENER
makes repairs

# PROFITABLE

no training or experience required—write today for FACTS.

STATORS REWOUND

FRANKELL MFG. CO.

#### SERVEL ANNOUNCES NEW ENGINEERING SETUP

Responsibility for the design and engineering of civilian products for Servel, Inc., will be concentrated in the hands of divisional chief engineers, according to John H. Wall, executive vice president.

Chief engineers are Clyde E. Ploeger, commercial refrigeration division; Robert K. Eskew, all-year air conditioning division; and Richard E. Deaux, home appliance division. Deaux is acting in the temporary absence of Dr. R. S. Taylor, who is on sick leave.

Each of the chief engineers will report directly to the general manager of his respective division.

#### MASTER-BILT ACQUIRES NEW PLANT

Master-Bilt Refrigeration Mfg. Co., St. Louis, is moving into new quarters at 4209 Folsom Ave., with occupancy effective Sept. 1. The company was formerly located at 920 Palm St.

The newly-acquired one-story

building will provide 60,000 sq. ft. of floor space for offices and manufacturing facilities.

Equipment produced by Master-Bilt includes egg coolers, milk coolers, cooling towers, solvent coolers for the dry cleaning industry, and specialized refrigeration equipment.

#### 5 N. Y. AREA BUILDINGS WILL USE NEW SYSTEM

Five multi-story buildings now under construction in the metropolitan New York area will be air conditioned by a new perimeter system supplied by Worthington Corp.

The five buildings in which Worthington high pressure induction systems are being installed are the 32-story New York Stock Exchange addition; the 26-story Bank of New York building; 18-story Mutual Benefit Life Insurance Co., Newark; the 12-story new Supreme Court Building, Brooklyn; and sixstory Hospital Service Plan of New Jersey building, Newark.



#### DEERING AWARDED \$1,339,000 CONTRACT

Deering Air Conditioning Co. has been awarded a \$1,399,000 contract to supply the residential air conditioning in the new Arrowhead Village housing project in Kansas City, Kan.

Deering will equip all homes in the huge new housing development with its "Tri-Pak" unit, a self-contained unit that performs the four functions normally assigned to furnace, cooling unit,

#### SIGNS OF THE TIMES?

EIGHT supervisors of Wisconsin Telephone Co.'s maintenance division became air conditioning students for five days recently. The men attended a special school conducted for their benefit by Airtemp Div., Chrysler Corp., in Dayton, Ohio.

H. A. Stein, the phone company's training supervisor, explains it this

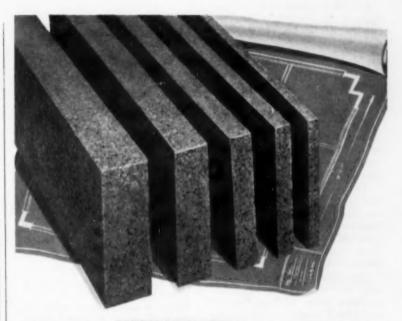
"Our company is using an increased amount of air coditioning. Therefore our maintenance heads need a full amount of air conditioning knowledge so that they will be able to work more closely with installing contractors and so that they will be able to evaluate equipment before it is given final acceptance."

Members of the company's various craft groups will begin participating in similar air conditioning training programs this fall, it is reported, with instructors being selected from the supervisors already trained.

hot water heater and humidifier. The unit occupies 6 sq. ft. of floor space.

In the Tri-Pak, steam created in a safety-sealed boiler rises into coils in the duct system for winter heating. During summer, similar coils cool the home. Hot water is supplied through a copper coil submerged in the boiler. An automatic humidifier controls moisture in all seasons.

Homes in the development are priced from \$17,000 to \$22,000. Negotiations for the air conditioning equipment were handled by James R. Riley, executive vice president of Deering Sales Corp. When completed, the project will cover from 700 to 1000 homes plus schools, churches and shopping center.



# THE BEST INSULATION IS CORK THE BEST INSTALLATION IS UNITED

TIME TESTED—Inspection of United Cork installations after 10 to 20 years service has shown the insulation to be as good as new—no deterioration—no loss in insulating effectiveness.

JOB-PROVEN—Many of United's orders in the last forty years are repeat orders from a wide range of satisfied cork users because of its JOB-PROVEN record.

LONG-LIFE-LOW COST.—United's BB Corkboard is durable and retains its insulating properties—it costs you less in the long run.

PATENTED DESIGN—United BB (block-baked) Corkboard is specifically designed for low temperature installations. It's all cork without added fillers or binders. The straight edged slabs of corkboard fit accurately, bond readily, and are easy to install.

UNITED'S COMPLETE INSTALLATION SERVICE —Our skilled erection crews, located at each of our branch offices can handle your complete installations. Avoid delays and improper applications of insulation by using United's experienced design and installation service.—Use the coupon below for additional product information and installation data.







# UNITED BB CORKBOARD

Manufacturers and erectors of cork insulation for almost a half century

#### UNITED CORK COMPANIES

7 Central Ave., Kearny, New Jersey

PAAME	Please send United Cork Catalog. I am interested in  NAME  FIRM  ADDRESS	UNITED CORK COMPA	NIES, 7	Control A	lve., Kearny,	N.J
	FIRM	Please send United Cor	Catalog	I am inte	rested in	
	FIRM	*****				_

Engineering and installation offices, or approved distributors, in key cities—coast to coast.

Circle No. 90 on Reader Service Card

#### NEW COMPANY WILL HANDLE YORK SALES

The supervisory board of diectors of the York Div. of Borg-Warner Corp. recently elected Roy C. Ingersoll as its chairman and set up a new company, the York Corp., a subsidiary of Borg-Warner, to be responsible for all factory and field sales operations of the York Div. S. E. Lauer was elected president and chief executive officer of the York Div.

The same officers and directors will head both the York Div. and the York Corp. The supervisory board elected new directors and reelected officers of the former York Corp. to the same posts in the new division.

Board members besides Ingersoll, who is chairman and chief executive officer of Borg-Warner, and Lauer, include:

R. S. Ingersoll, president of Borg-Warner; H. M. Hasse, assistant to the president, in charge of engineering, research and development of Borg-Warner; R. W. Murphy, vice president and general counsel and vice chairman of the executive committee of Borg-Warner; L. G. Porter, executive vice president of Borg-Warner; Albert Steg, financial vice president and treasurer of Borg-Warner.

R. F. Lauer, vice president in charge of engineering and research, and assistant to the president, of York; J. K. Louden, vice president and general manager, Commercial Div., of York; R. K. Serfass, vice president and general manager, Industrial Div., of York; C. W. Fenninger and William J. Meinel, former members of York Corp. board.

Former officers of York Corp. reelected were: vice presidents A. C. Freimann, J.M.L. Joslin, D. M. Magor, M. G. Munce; secretary and treasurer, W. F. Lynne. R. H. Dowling was elected assistant vice president to R. F. Lauer; C. A. Barnes, assistant secretary and assistant treasurer and C. W. Fenninger, Jr., assistant secretary.

#### AUTOMATIC VENDORS MEET IN CHI. DEC. 2-5

Several refrigeration vendor manufacturers are among the 125 exhibitors who already have reserved space for the 1956 trade show of the National Automatic Merchandising Association. The show will be at the Conrad Hilton, Chicago, Dec. 2 through 5.

#### CARTER INSTALLED AS RTA PRESIDENT

Officers of the Refrigeration Trade Association of America for the fiscal year ending June 30, 1957, recently were installed in ceremonies held at the Ambassador Hotel, Washington, D. C.

They were: L. L. Carter, Winston-Salem, N. C., president; R. H. Packett,

Washington, D. C., executive secretary; Sidney Bloom, Washington, D. C., first vice president; J. B. Broughton, Richmond, Va., second vice president; O. Manley Smith, Rural Hall, N. C., secretary; Leo Wolff, Baltimore, treasurer; Arthur Jarrett, Washington, D. C., sergeant at arms; N. F. Crater Sr., Winstou-Salem, chaplain; W. J. Batrus, Washington, D. C., general counsel; and M. G. Horwitz, Silver Spring, Md., editor.

Directors for term of two years: N. F. Crater Sr.; H. S. Dudley, Washington, D. C.; A. C. Huber, Baltimore; and Henry Van Langen, Philadelphia.

Directors for term of one year: A. E. Bates, Raleigh, N. C.; George Brickle, Wilmington, N. C.; M. G. Horwitz; John Orner, Folsom, Pa.; and S. Pollock, Arlington, Va.

#### UNARCO DIV. SWITCHED TO NAT'L-U.S. RADIATOR

National-U.S. Radiator Corp. of Johnstown, Pa., and the Union Asbestos & Rubber Co. of Chicago, have announced jointly that an agreement has been signed transferring the Air Conditioning Div. of Union Asbestos & Rubber to National-U.S. Radiator.

Principal acquisition in the transfer for National-U.S., is a manufacturing plant in Greenville, Ill. Spokesmen for both companies said that the majority of all personnel connected with the operation of the division were being transferred to National-U.S., with no change in duties. The division has been a major supplier of air conditioning products to National-U.S. Radiator for several years.

National-U.S. plans to continue to market air conditioning products under the Unarco label.

#### CARRIER'S DALLAS OFFICE RELOCATES

The modern completely air conditioned office building housing headquarters personnel of Carrier Corp's Dallas district, was opened recently.

Located at 10838 Central Expressway and Manderville Rd., the single-story structure includes areas for light assembly work and storage. Key executives are Oscar Mehl and John N. Gillham, directing the Machinery and Systems and Unitary Equipment Divs., respectively.

#### NEW SITE OF GM AIR CONDITIONING DEVELOPMENT



AIR CONDITIONING development will be part of the industrial research program undertaken at the huge new General Motors Technical Center at Warren, Mich., north of Detroit, Central staff research, styling, manufacturing and engineering facilities are grouped around a 22-acre artificial lake. On the 320-acre site are 25 buildings, ranging from gatehouses to an array of modernly equipped laboratories, test cells and product design studies. Frigidaire's engineering staff works closely with GM's engineering and research staff in the development and refinement of both new and existing products.

#### WASTE STEAM ...

Continued from page 81

creating a high vacuum in the connected water-chilling compartment behind them.

The high vacuum causes about 1% of the flowing water in the chilling compartment to vaporize, and this evaporation cools the entire flow about 10 degrees F. Operational temperature, in this case, will be about 50 F.

As specified by Norton's engineers, the first booster will operate continuously in warm weather. The second and third will operate only intermittently and at whatever fraction of their total capacity that may be required. In maximum service, all three will operate at full capacity simultaneous-

An independent water supply for condensing the steam will be

TINY, BUT POWERFUL



THIS TINY supersonic rotating assembly is part of the revolutionary new device developed by Carrier for air conditioning the Douglas DC-8 jet airliners. At left is the turbine, driven by compressed air from the jet engine; on the other end of the shaft is the rotor, which generates enough cooling to air condition seven ordinary houses. Entire compressor weighs only 8 lbs., is about one-fourth the size of the cooling unit in a household refrigerator, but 100 times more powerful.

pumped to a cooling tower on the roof. It will be designed to reduce the temperature of this water from 103 F to 85 F. A single 40-hp motor will power the pump.

The basic cooling unit will be located in Building No. 6. From it, chilled water will be pumped to about 15 blower-evaporator

units in various parts of the three adjoining buildings. Most of the evaporator units will discharge chilled air directly into the areas where required, but a moderate amount of ductwork will also be used to control the distribution in some locations

The chilled water will be moved by a 30-hp pump through pipes ranging from 6" od. to 3/4" at the most distant units, which will be located about 200' from the starting point. All of the piping will be covered with 1" cork insulation.

Total area to be served by the steam-jet system will initially be about 31,000 sq.ft., but about 24,-000 more are to be added in the

Supplementary heat is used in the boosters only in start-up periods. As soon as the abovenormal amount of steam poured into the condenser at such times has been condensed to raise the vacuum to the desired level, the the supplementary heat cuts out. Thereafter, the quantity of low pressure steam is sufficient to maintain the same vacuum level.



3314-78 \$ BROADWAY . ST LOUIS 18, MO

SH Spring Hanger

 Spring-Flex (Steel Spring)
 Vibration if you have a VIBRATION problem can solve it!

Vibration Mountings Engineers are experts in finding the right solution to shock and vibration transmission problems. Their experience and VM's complete line of vibration control mountings and materials can increase your operating efficlency and save equipment and floors. Ask a VM representative to call or submit your problem to our home office

Specialists in Vibration Control for: FANS & MOTORS REFRIGERATING COMPRESSORS PUMPS - BOILERS AIR CONDITIONING UNITS SUSPENDED EQUIPMENT - PIPING SHEARS - PRESSES - BRAKES

Write for Bulletin VAC-11 "Vibration Isolation for Heating, Ventilating and Air Conditioning Equipment".

if it's a vibration or shock problem get the right answe



VIBRATION MOUNTINGS, INC.

98-23 50th Ave., Corona 68, New York | Representatives in Principal Cities of United States and Canada.

Circle No. 91 on Reader Service Card

# FINE

ICC REFRIGERANT

#### CYLINDERS

Acclaimed by Safety Engineers

#### LO-BOY TYPE

Maximum safety assured, FINE Cylinders offer your cheapest insurance against explosion danger! Their extracpacity decreases high pressure due to hydrostatic expansion. Heavier metal walls, thicker at ends. Broad base prevents tipping, offers extra valve protection. Forged brass valves with fusible safety. (Spring

loaded safety, slightly extra.) Cylinders hammered gray finish. Caps included (except 5E). Sizes: 5E, 10L, 25L, 35L.

Write for Catalog



#### HANDY-TOTE CAP

Provides an extra hand for the busy service men to carry tools, tubing and parts. Saves trips to sevice truck. Standard cylinder thread. Quickly transfers from one cylinder to another. Built to last.



Truly flexible, full 36" length, with leakproof Rapid Couplers and forged brass, 1-piece, 45° E-Z FLOW L-BO. Two-ply construction; heavy inner gastite Neoprene Core. Non-kinking, tight weave, very flexible, luster coated cover. Knurled nuts for finger-tip tightenins.

ASK YOUR WHOLESALER

Write for new Catalog
No. 454

THE PRODUCTS CO.
6240 OGDEN AVE.

BERWYN (Chicago Sub.) ILLINOIS

Circle No. 98 on Reader Service Card

#### HOW TO AIR CONDITION A HOLE IN THE GROUND

To air-condition a hole in the ground can be quite a problem.

A New York structural display company, called upon to create a cool, pleasant enclosure in a tunnel where the temperature is consistently over 90 F, used equipment built by Typhoon Air Conditioning Co. to do the job.

The tunnel, part of the complex maze of underground passages that make up Grand Central Terminal, is being used to display Pioneer III, a new railway passenger coach of Budd Co. of Philadelphia.

Budd planners, seeking a central location, found the Grand Central tunnel, under the Waldorf-Astoria Hotel, ideally situated but unsatisfactory in two major respects: It was dirty and the already hot enclosure would be made even hotter by the lights necessary to illuminate the area.

The problem was passed to the Structural Display Corp., engaged to build the enclosure, and Structural passed it on to Billen Engineering Co., one of Typhoon's New York distributors.

Billen engineers then worked out an arrangement of equipment that guaranteed a comfortable 70 to 75 F level. This 15° drop was accomplished despite the fact that the partitions of the enclosure left a 4' opening around the top. From ceiling to floor in the tunnel is 16'. The partition is 12' high.

To make this subterranean showplace comfortable, 15 tons of equipment—three 5-ton air-cooled condensing units and three 5-ton low side air-handling units — were used. One hundred persons can be accommodated comfortably in the 140' x 30' enclosure.

#### AUSTRALIAN FIRM TO MAKE RANCO UNITS

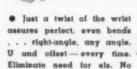
Ranco Inc., has entered into an agreement for the manufacture and sale of its pressure and temperature controls in Australia by Wilcolator (Australia) Ltd., according to A. M. Hoover, president.

The agreement provides for acquisition by Ranco over a threeyear period of a 40% interest in the Australian company for approximately \$320,000.

### **Handy** Tube Bender

Smoothly Bends ANY
Pipe or Tubing

38" to 118" O.D.



more guesses—no kinks! Save enough time. labor and money on ONE Job to pay for your Handy Bender.

See your supply house—or write for free folder today.

HOLSCLAW BROS., INC.

438 H. WILLOW ROAD - EVANSVILLE, IND.





Circle No. 95 on Reader Service Card

#### **OPPORTUNITIES**

(Classified Advertising)

Rates: for "Positions Wanted." \$4.50 minimum, limit 25 words. For all other classifications, \$4.00 minimum for 25 words or under, each additional word 20e. Boldface type or all capitals, \$10.00 minimum for 25 words or under, each additional word 25e. All classified advertising payable in advance.

#### POSITIONS AVAILABLE

CHIEF REFRIGERATION ENGINEER Unusual opportunity for a well grounded man who wants and can take responsibilities. SALARY OPEN — Location New York City — Our organization knows of this ad. Write in confidence to Box 9256, Realservice Advtg. Agency, 110 West 34 St., N. Y. C.

WANTED FIELD SERVICE SUPER-VISORS—Old, established, nationally known appliance manufacturer is expanding service field force. Has openings in various territories for experienced men. Write in confidence to Box 9356, COMMERCIAL REFRIGERA-TION & AIR CONDITIONING.

#### REPRESENTATIVES WANTED

MANUFACTURER REPRESENTA-TIVES—Well known manufacturer of commercial refrigeration and air conditioning products looking for factory representatives. Has two openings, one in New England and the other in Pacific Northwest. Box 9156, COMMERCIAL REFRIGERATION & AIR CONDI-TIONING.

#### EQUIPMENT FOR SALE

MANUFACTURER LIQUIDATING AT 50% OF COST COMPLETE RESIDENTIAL 2 AND 5-TON AIR CONDITIONERS. ALSO IN ORIGINAL CONTAINERS, COMPRESSORS, CONDENSERS, EVAPORATORS. COILS, BLOWERS, AND RECEIVERS FOR 2, 3, AND 5-TON UNITS. INDUSTRIES DEVELOPMENT CORPORATION, SOUTH NORWALK, CONN. TELEPHONE: DAVIS 2-8248, STAMFORD, CONN.

#### DURO-VANE-RAIL NOW COMES IN COIL FORM

"Duro-Vane-Rail," a product of Duro-Dyne Corp., used for making high quality single or hollow air turning vanes for square elbows, now is available in continuous coil form.

Duro-Vane-Rail in coil form of 100 feet lies flat after easily being dispensed from its carton. Previous packaging in bundles of 25, 8' strips is still available.

BUY FROM YOUR REFRIGERATION WHOLESALER

#### HONEYWELL PUBLISHES HANDBOOK ON COOLING

Information on equipment, installation and automatic controls accumulated during the "growth" years of residential air conditioning is presented in a new book, "Fundamentals of Air Conditioning Controls," by Minneapolis-Honeywell Regulator Co.

The company said the new handbook fills a need that has developed due to the relative newness of air conditioning and the absence of standardization of equipment, practices, and cooling concepts.

The book is available at 50 cents a copy to air conditioning equipment manufacturers, distributors, dealers, and installers as part of Honeywell's program of training and education to the industry, according to Dick Locke, air conditioning controls manager.

The book covers the field of air conditioning from basic refrigeration to today's advanced concepts and equipment for residential cooling. It includes complete sections on control applications and electrical distribution practices. Circle No. 97 on Reader Service Card

# Stop noise from vibration



Just cut what you need for the weight of the air conditioner, and install under the unit. One square inch for each fifty pounds of weight does it. ISOMODE PADS absorb vibration, cut down noise on any type of floor. Made of Du-Pont neoprene, they resist oil, last for years. No cementing needed ... units stay put. ISOMODE PADS are most economical when bought in standard packages of ten 18° x 18° sheets. Write for prices and Information Bulletin No. 415.

Trade Mark

#### MB manufacturing company

A DIVISION OF TEXTRON AMERICAN, INC. 1060 State Street, New Haven 11, Conn.

# Stuck Pumps FOR Me NEXT SPRING!



PUMP-AID is the new aerosal product giving push-button protection against cerrosion and stuck pumps on seasonally operated cooling towers, evaporative condensers, etc.

To pretect egainst corresion end other down period problems, inject PUMP-AID through drain hole into pump housing immediately after draining. PUMP-AID is supplied in aerosol cannister using Freen type propellant which instantly spreads a generous (patent pending) carting over all surfaces. PUMP-AID is also highly beneficial in preserving neoprene, rubber and graphite type seuls.

Other outstanding PUMP-AID features are: It will not freeze; will not evaporate; requires no special job preparation; adheres to surfaces permanently until flushed off; is water soluble—not necessary to drain when new season starts, (just throw switch and begin operation); non-taxic-may be used for domestic pumps if properly flushed; economical to use. Protect "YOUR" pumps with PUMP-AID now!

... and for COMPLETE WATER TREATMENT in refrigeration and air conditioning water recirculating systems, use Vapeo Cleaner, Vapeo Preventive, Vapeo Stime-X and Vapeo Ice Cube Machine Cleaner, Available at your favorite wholesaler, or write...

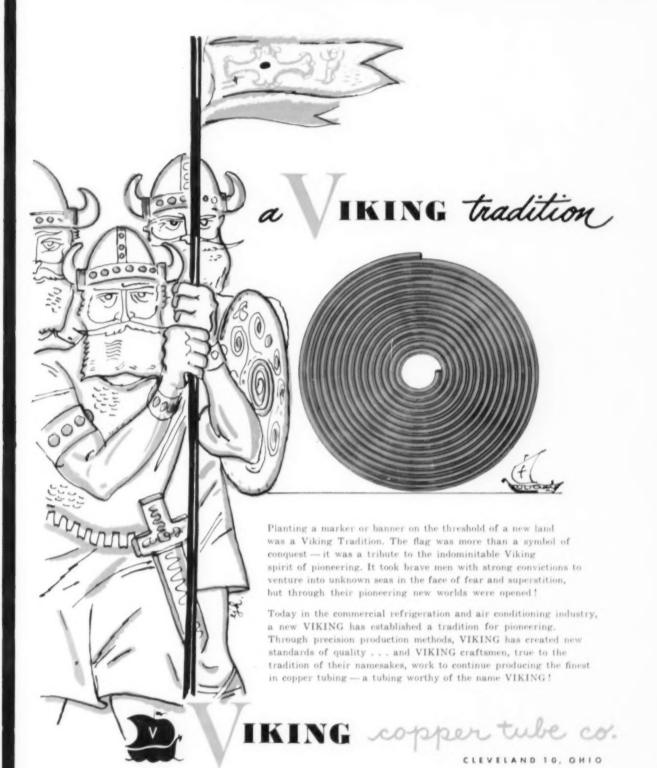


The GARMAN COMPANY

Circle No. 96 on Reader Service Card

A	Frick Co	P
	Friez Instrument Div., Bendiz Aviation Corp. 20	Paragen Electric Co
Acme Electric Corp. 62	Sendia Aviorion Corp.	Paragon Electric Co
Airserce, Inc		Machinery & Chemical Corp 74
Alco Valve Co	G	Penn Brass & Copper Co 97
Allen-Bradley Co		Penn Controls, Inc
Allin Mfg. Co	Garman Co., Inc. 121	Pinnacle Equipment Corp
American Bross Co	General Chemical Div., Allied Chemical & Dye Corp 16-17	
American Potash & Chemical Corp 9		R
American Radiator & Standard Sanitary Corp. 30-31	н	Ranco, Inc
Amprobe, A Div. of Pyramid Instrument Corp. 43	Halstead & Mitchell 22	Reading Tube Corp108
Anderson Chemical Co. 65	Handy & Harman	Revere Copper & Brass, Inc
Anemostat Corp. of America 33	S. A. Hirsh Mfg. Co. 57	Rotary Seal Co. 109
A-P Controls Div.	Holsclaw Bros., Inc. 120	
Controls Corp. of America	Howe Ice Machine Co. 58	
Armstrong Cork Co. 67		S
	3	Sporlan Valve Co. 101
	Lanina Cald Stances Dans Co	Square D Co. 19 Standard Refrigeration Co. 120
	Jamison Cold Storage Door Co 8	Stewart Industries, Inc
Barber-Colman Co	Janitrol Heating & Air Conditioning Div., Surface Combustion Corp 72	Stic-Klip Mfg. Co
Bevco Co	Jarrow Products 68	Synco Co. 96
Brunner Mfg, Co. 4	Johns-Manville 63	Synco Co.
Bush Mfg. Co. 25		
		т
c		2
	Kenmore Machine Products Co. 114	Taco Heaters, Inc 91
Century Electric Co. 7	Kerotest Div.,	Tecumseh Products Co
Chase Brass & Copper Co 69	Miller Printing Machinery Co 113	Temprite Products Corp. 26
Cold Corp. of America	Kinney Mfg. Co	
Commercial Credit Corp	Kramer-Trenton Co	
Connor Engineering Corp		U
Copeland Refrigeration Corp. Cover 2		Uniflow Mfg. Co
Cornell-Dubilier Electric Corp. 64		Union Carbide & Carbon Corp.,
Crane Packing Co 100	Larkin Coils, Inc 61	Linde Air Products Co
	Lehigh Mfg. Co	United Cork Cos
	Linde Air Products Co., Unit of Union	
D	Carbide & Carbon Corp112	
Drayer-Hanson, Div. of		. V
National-U. S. Radiator Corp. 90	M	Velocity Power Tool Co. 21
Dunhill Soda Fountain Corp. 100		Vibration Mountings, Inc
	M-B Mfg, Co. 121	Viking Copper Tube Co. Cover 3
	Jas. P. Marsh Corp	Virginia Smelting Co
E	McQuay, Inc	Virginia Smering Co.
	Minneapolis-Honeywell Regulater Co. 39	
Eastern Industries, Inc	Modine Mfg. Co	w
Electric Auto-Lite Co. 109	Goodlee E. Moore, Inc	**
	J. W. Mortell Co	Wagner Electric Co
	Mueller Bross Co14	Wagner Tool & Supply Corp. 71
•		Wheel Trueing Tool Co
Fine Products Co	N	A. H. Witt Co
Flexonics Corp		Wolverine Tube Div.
Frankell Mfg. Co	National Lock Co. 21	Calumet & Hecla
Freez-rite	Niagara Blower Co 87	Worthington Corp. 79

INDEX TO ADVERTISERS



#### PRECISION DRAWN SEAMLESS COPPER AND ALUMINUM TUBING

#### EXTRA STRENGTH

The proper kind of strength and ductility is vital in tubing used for refrigeration and air conditioning purposes. Copper tube possesses these qualities to a far greater degree than other types of tubing. Its uniform temper assures trouble-free fabrication.

#### EXTRA FLEXIBILITY

Viking Copper Tube is soft and pliable, vet exceedingly rugged. It saves time and lanor because it can be coiled, formed, flared and expanded quickly without danger of fracturing or splitting.

Circle No. 2 on Reader Service Card

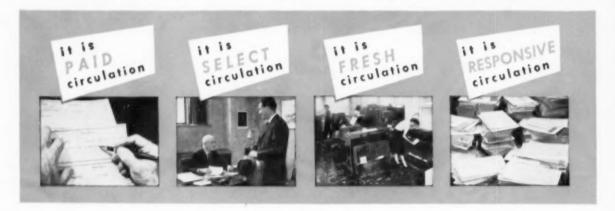
#### CLEAN AND DRY

Viking Copper Tube is triple-sealed at the ends, stays dry and absolutely dirt-free. The seal is made to pass through any opening large enough for the tube itself. It's clean . . . it's bright , . . it's dry!

#### hat every buyer of space

should know about

# FRANCHISE-PAID CIRCULATION



- CHISE-PAID CIRCULAing distributor in every market in order that the publication reach his best prospects, tool
- Every subscription to a The salesmen of the publication using FRAN- leading distributors in every market select the men to re-TION is paid for by a lead- ceive a FRANCHISE-PAID publication only after making repeated sales calls on these men and determining customers and prospects, that they have the real These must be your best specifying or buying author-
- PAID CIRCULATION.
- These salesmen know al- Since readers of FRANmost immediately which men CHISE-PAID CIRCULAhave been transferred . . . TION publications are men promoted . . . or are no who are making the buying longer the key men-and decisions in active plants, send in these changes daily. their response to advertis-There is no waste-no "dead ing in these publications has weight" in FRANCHISE- proven to result in business in record-breaking volume.

It combines the best features of ALL types of circulation

to give your advectising the Best Results

FRANCHISE-PAID CIRCULATION goes only to men (by name and title) who have been positively identified as having buying authority in the most active plants. It, therefore, carries your advertising message to the finest, most responsive audience that exists for your products or service. Daily changes in its circulation, sent in by local franchise distributors, insure that you get the new buyers as they come into the market . . . drop the "has-beens." No other method of circulation can offer "waste-free", successful combination of features that for years has developed substantially more business for advertisers.

INDUSTRIAL PUBLISHING GROUP



"FRANCHISE-PAID" Identification—it is your assurance of the best circulation in its field. 812 Huron Road

Flow

Cleveland 15. Ohio

Flow's Material Handling Illustrated 

Applied Hydraulics 

Occupational Hazards Precision Metal Molding @ Industry & Welding @ Welding Illustrated Commercial Refrigeration & Air Conditioning Modern Office Procedures